Network

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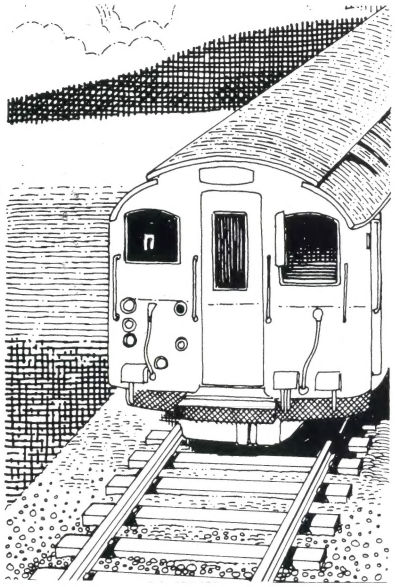

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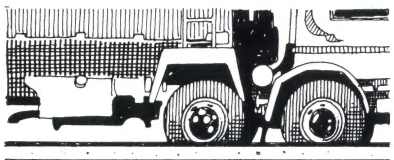

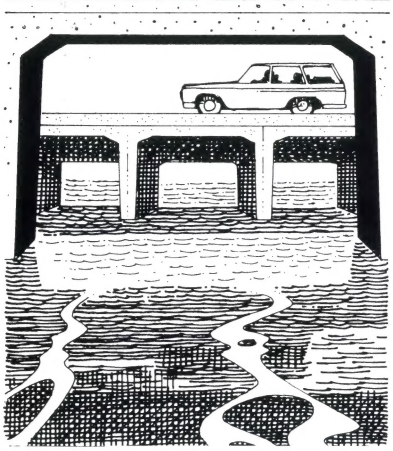

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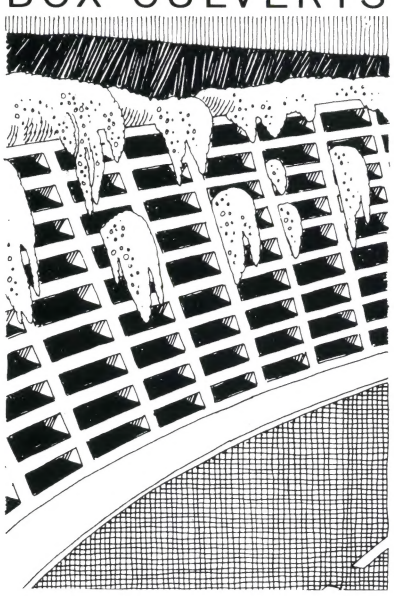

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Railways of Australia Quarterly

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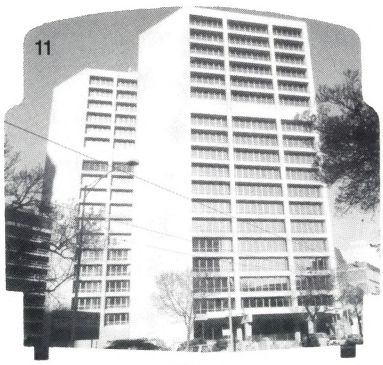

V/Line

Australian National

Queensland Railways

State Rail Authority of NSW

New Zealand Railways

Contents

Front cover:

Signal gantry in the Adelaide North Yard soon to be relegated to history as modernisation takes place at the new Keswick Australian National complex. Picture: Rodger McCormack.

Our only requirement of writers and personalities who contribute to Network is that they be informative or entertaining and that their subject has relevance to the wide interests of railwaymen today. Naturally, there will be occasions when their viewpoints or opinions run contrary to those of the editor or to Railways of Australia. We must accept that these differences are among the elements essential to the presentation of a lively and interesting magazine.

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The *EXECUTIVE DIRECTOR'S* column

Since assuming the task of Executive Director in June last, I have travelled through Australia's capital cities meeting senior rail managers and their staff, and learning a little of their tasks, skills and attitudes.

As one who has worked in transport circles most of my life to date, I have met and known many railwaymen. But "from the inside", so to speak, the perspective is different, and my brief experience from this position has highlighted what must be a key factor in Australia's future rail development.

Popular Australian author/historian, Patsy Adam Smith, has referred to our railway development as based on "Ten per cent iron, ninety per cent men". That assessment is as true today as ever, perhaps even more so.

We are passing through a period of technical modernisation in our rail Systems. New passenger rolling stock is being introduced; new freight vehicles to meet specialised needs are in service; operating hardware has been improved and made safer. Yet none of these advancements can succeed without ***people*** *— railway staff trained and motivated to ensure their success.*

And it is in this area that my recent experience has been so rewarding. In meeting Australia's railway personnel, I have reached the firm conclusion that our base for a movement forward is a solid one.

All our Systems have undergone changes in management structure and approach during the last decade. The changes have been greater in some Systems than in others, and no change is easy to accept. But from all areas emerges the impression of total understanding of the task for the future, its political and other constraints, and of dedication to grappling with it.

There is certainly a strong understanding that we need to consider the true nature of rail's market and the requirements of its customers. Those customers — freight and passenger — can, I believe, be assured that competent ***people*** *are ready to help them.*

Further, the Railways of Australia Committee and its staff will continue to play an important part in co-operating with all Systems to achieve a common goal of better transport for Australia. We shall work towards that end.

M. C. G. SCHRADER
EXECUTIVE DIRECTOR

M. C. G. Schrader

Big boost for national freight

Mr David Hill, Chairman of the Railways of Australia Committee, recently announced that Australia's railways are gearing to boost customer service with the establishment of a new National Freight Group. As a result the rail Systems plan to increase their share of the market for long-distance freight and improve the financial performance of this key part of their business.

At the head of the Group's management team is Mr John Stewart, until recently Marketing Manager for Australian National. As National Freight Manager, he will be responsible for developing an integrated intersystem freight marketing plan and for helping rail Systems to implement this plan.

Mr Stewart will report to a new National Freight Committee, chaired by Dr Don Williams, who is also chief executive of Australian National. This Committee includes the senior Marketing Executive of each rail System, Mr Stewart and the ROA Executive Director, Mr Michael Schrader.

Mr Stewart will be recruiting a small professional staff (4) for the Group, including National Marketing Managers for the principal 'business groups' involved in intersystem freight. They will be based in Melbourne, and will receive administrative support from the ROAC headquarters.

The appointment of Mr Stewart and the establishment of the National Freight Group follows a land-mark decision taken by Railway Commissioners in July this year. For a year a Steering Committee of senior railway marketing executives has been considering ways to improve the organisation of national freight marketing.

A firm of consultants was engaged to study the options, and their report highlighted the need for a better planning and improved customer service and communications.

The new Group has the support of the Commonwealth Minister for Transport, Mr Peter Morris, who stated recently that he strongly favoured a national marketing organisation for railways.

The objective of the National Freight Group will be to integrate and co-ordinate the intersystem freight marketing of all rail Systems, in order to ensure that national rail customers receive competitive and reliable intersystem freight services. It will assist rail Systems to achieve customer service levels which are equal to or better than those offered by competitors. As a result, it is planned that rail Systems should earn contributions (net revenue) from individual traffics sufficient to ensure overall profitably of rail's intersystem business.

The new concept extends beyond merely increasing sales effort. Comprehensive business plans are being prepared for each major group of commodities carried by intersystem rail services.

These plans will include business objectives and targets, service performance standards, equipment needs, operating plans and budgets.

The role of the National Freight Group will be to draw up these plans, in consultation with rail Systems, and then work with rail Systems to ensure that both sales and operating plans and performance targets are achieved.

Business plans already prepared within Systems will be used as the basis for planning at the National level.

The concept has already been introduced to rail customers through the media, and a special information pamphlet is going out to all members of rail staff who will be working with the Group.

ROA's National Freight Committee met recently in Melbourne. Seated (L to R): Mr J. Stewart (ROA National Freight Manager), Dr D. Williams (Chairman, NFC), Mr M. Schrader (Deputy Chairman, NFC). Standing: Mr V. Wilson (QR), Mr S. Johr (ROAC-CENWAG), Mr V. Graham (SRANSW), Mr S. Beevor (V/Line), Mr B. Plunkett (ROAC), Dr F. Affleck (AN). Absent: Mr B. Sutherland (Westrail).

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SRA launches plan for cleaner trains

The State Rail Authority has launched a programme to upgrade the cleanliness of its trains.
The Authority's Chief Executive, Mr David Hill, said that a special Project Manager, Mr Alex Pirie, has been appointed to co-ordinate train cleaning activities.
Mr Pirie is an industrial chemist who has worked for the railways for 29 years. As a member of the professional staff attached to the Authority's Testing Laboratories he has for the last 15 years been the technical adviser on cleaning chemicals and processes.
"We are looking forward to a significant increase in the cleanliness of the interior and exterior of trains", Mr Hill said. "The SRA board has indicated this special project will get its full support and the resources needed to achieve this."
"Many extra carriages have been added to the fleet and interurban as well as suburban trains have been running many extra kilometres a day since the new timetable was introduced last November", he said. "This expanding fleet and additional usage had stretched our cleaning resources."
"Another problem affecting trains has been the upsurge of vandalism particularly the slashing of train seats", Mr Hill said. "This means that some trains have to receive out of course maintenance or seat replacement when they should have been cleaned."

Part of Mr Pirie's job will be to see that these functions are co-ordinated.

Mr Hill said the SRA believed that the train travelling public is entitled to travel in a clean train sitting on seats which are not slashed by vandals. They expect their train to get them to work on time and home again promptly.

"This is what we are aiming at", Mr Hill said.

Recently three youths were arrested after being seen by State Rail Authority staff slashing seats. Another two persons were arrested for smashing train windows.

Mr Hill said since plain clothed officers of the Authority's Transport Investigation Branch intensified their train patrols in Sydney and Newcastle 180 persons have been arrested and a further 856 reported for such offences as wilful damage; offensive and indecent behaviour; interfering with train equipment; disorderly conduct; drug related offences; fare evasion; under influence; and feet on seats.

In addition to the above the SRA special afternoon train patrols have reported over 1300 persons, including school children for offences which include interfering with automatic doors; joining or leaving trains in motion; leaning out of train doors; disorderly conduct; bad language; throwing rubbish; climbing through train windows; spitting; and fare evasion.

Meanwhile, speaking at the Commonwealth Legal Aid Conference recently State Rail Authority Chief Executive, David Hill, explained that last financial year the SRA had to make a number of decisions to contain costs. This was necessary as the only alternative was to sack some thousands of rail workers.
He said that the reforms introduced, despite being unpopular, enabled the SRA to come through the drought and recession without retrenching staff.
Sufficient progress has been made in the Authority's economic management to enable it now to employ more staff in critical areas.
He said that shortly advertisements will invite applicants for about 700 jobs. This follows the recruitment of 600 last January.

The new jobs include:

- Tradesmen
- Station Staff
- Professional Engineers
- Train Drivers
- Clerical Staff
- Labourers for Workshops and Engineering Maintenance Depots.

He advised unemployed persons to watch for these advertisements and make written applications for the job of their choice.

QR computer will improve design development

Transport Minister Don Lane says a new computer system to be introduced will reduce handling time for the Chief Signal and Telecommunications Engineer's Branch of Queensland Railways.
Mr Lane said a Computer Aided Drafting and Design (CADD) System was to be obtained for the signal circuit design section.

He said the CADD System would also mean increased efficiency overall — a further saving to the taxpayer.

The production of engineering design, drawings and other documentation was a critical phase in the engineering development cycle.
"It requires rapid turnaround consistency and accuracy."
Mr Lane said a contract to supply a two-work station CADD System had been awarded to the Intergraph Corporation Pty Ltd, at a cost of $330,137.00.
The system would be complete with a plotter and special application software driven by a VAX 11/730 computer.
"Modern CADD systems improve both quality and productivity by helping designers and draftsmen to eliminate the tedious aspects of drawing creation, minimise turnaround time, implement design revisions quickly and easily.
"They achieve a standard of accuracy and consistency simply not possible with manual, techniques."
Mr Lane said productivity gains were achieved by the system's ability to capture design information once only, creating an integrated "database" which could be used throughout the design and construction cycle.
A feasibility study and cost benefit analysis had shown the signal circuit design section as the area which would reap the greatest benefits.
Mr Lane said it was expected the CADD systems would pay for themselves in about three years.

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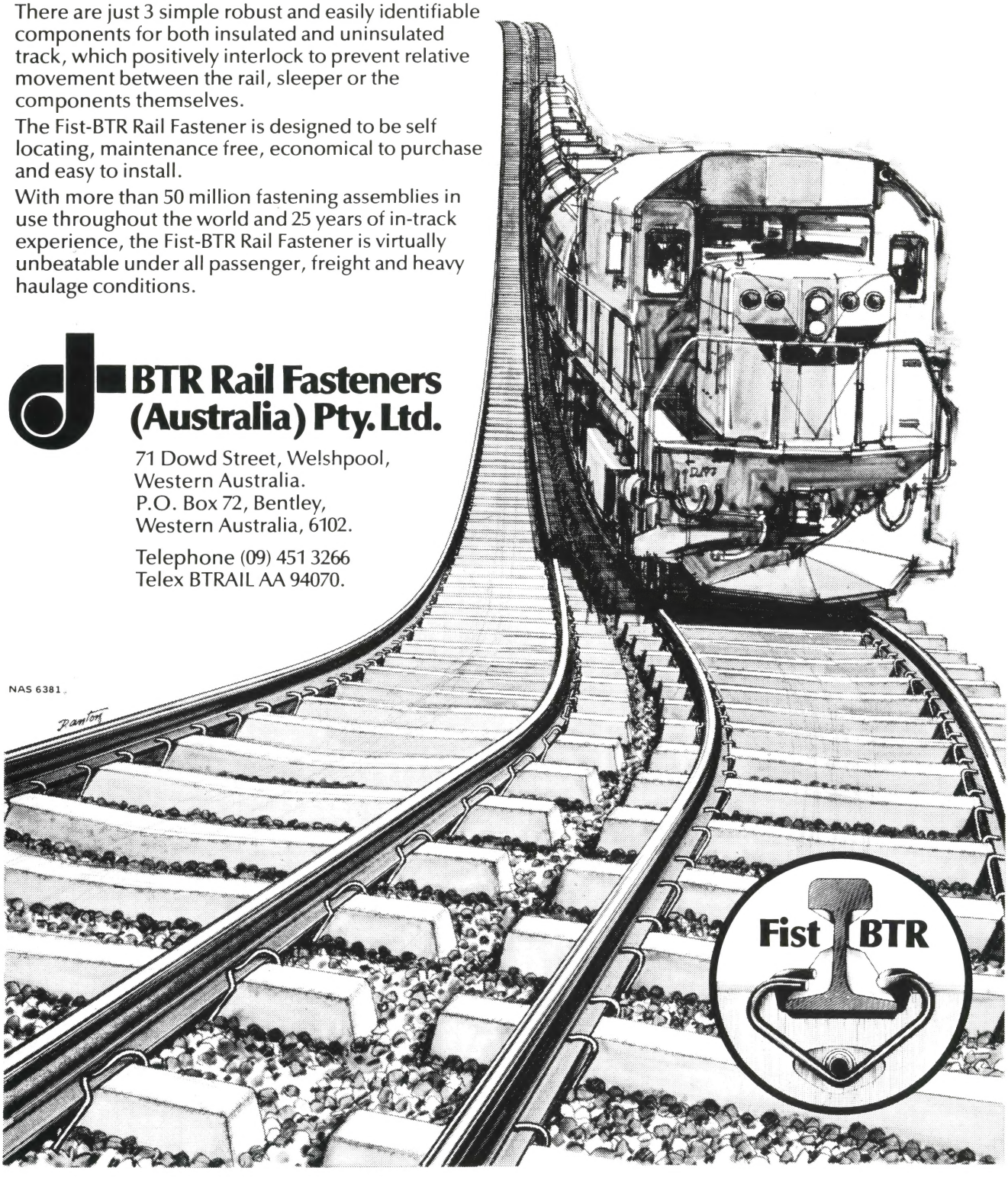

Historic Shift for V/Line H.Q.

V/Line staff working in Melbourne are currently moving into new offices at 589 Collins Street, almost opposite the old building that has been rail's headquarters for more than 90 years.

The airconditioned 18-level complex is owned by the Victorian State Superannuation Board. The two top floors will accommodate the Ministry of Transport.

The various sections of the organisation at present scattered in rented offices throughout the city — at 67 Spencer Street; State Savings Bank, corner Spencer and Collins Street; Marland House, Bourke Street; Associated National House, Collins Street; Wool Exchange House and VPC House, both in Little Collins Street; Western House, corner William and Collins Street; Bank Place; and Flinders Street Station — will be brought together in the new building situated at Melbourne's 'West End', already seen, with the construction of the New World Trade Centre and Rialto development, as the city's largest growth centre.

All told, more than 2000 staff will shift to the new building. The move will be progressive, and by the end of 1984 most V/Line staff will be relocated.

The neutral colour schemes of walls and carpeting will complement furnishings and partitionings whether they be solid timber, glass or portable screens.

The authority's existing furniture will be utilised if it harmonises with the new environment, which will be a blend of closed and open planning, depending on the functional needs of each group.

A credit union or banking facility and a kiosk, will be provided on the ground floor. Two basement levels will provide storage and parking for V/Line vehicles as well as goods access from Flinders Lane.

V/Line management, working in close consultation with the unions, has ensured this modern complex will meet all the needs of a growing transport organisation, including the installation of a new communications system, recognised as one of the most modern in the world.

The new building will be one of the first parts of the rail system to benefit from the revamped communications network for which a major contract was recently let.

V/Line's new headquarters at 589 Collins Street.

The new communications network will be a particularly dramatic change embodying the latest technological developments.

The new network will replace what is probably the oldest large telephone exchange still working in Australia — the Head Office exchange was installed in 1935.

The totally new PABX network will comprise a 2000 line exchange to service the new Head Office and 17 smaller satellite exchanges at Spencer Street, Flinders Street, Batman Avenue, Spotswood, Newport, West Tower, Caulfield, Dandenong and Ringwood in the metropolitan area and at Seymour, Ararat, Ballarat, Bendigo, Traralgon, Geelong, Wodonga and Shepparton in the country.

A new communications building is to be provided on railway property near the existing Head Office to accommodate the main items of new communication equipment and will become the cabling distribution point for the entire network.

The existing Train Control Centre, now located on the ground floor at Head Office ('Centrol') is to be modernised and relocated into the new building.

Together with the establishment of the new 'Centrol' will be the modernisation of the existing North East Standard Gauge C.T.C. system, transfer of the existing Western line C.T.C. system, and provision for future C.T.C. systems on other lines.

Two useful directories and a catalogue.

This quarter we review two useful directories, local and international and (would you believe?) a catalogue.

Railway Directory and Year Book (annual). Edited by Chris Bushell. IPC Transport Press Ltd, 140 x 215mm, 652pp. $50 locally.

The last *Directory* that we reviewed was in 1981, and the basic format remains unchanged. Within that format, however, there are several significant improvements.
The individual railway entries remain in essentially traditional format, and appear to have been thoroughly updated, with useful prefix entries for each country's (in Australia, each State's) Ministry responsible for railway matters.
There is also a classified index for the inevitably complex categories of locomotive, rolling stock, and signalling equipment manufacturers. This summarises in a matrix layout, by country, exactly which firm does and does not make what specialist product. The "Statistics and Miscellaneous" section has contracted to two pages — it could never really compete with Janes for the office and the Guinness book of railway records for the home library, and the museums and preserved railway references have been correspondingly improved.
Both are useful changes for dedicated Australian railway people planning an overseas trip.
And we are very glad to report that Australia has now got its international *Directory* act into top gear. Due largely to the efforts of Paul Rogers in Transport Australia, and firms whose Directors reacted positively to the things we've said about their industry in past book-review columns of *Network*, the entries for Australia are now spot-on in terms of railways (the separation of the Melbourne MTA from V-Line followed publication) and railway-related organisations.
All the best railway people now get a guernsey, and the Adelaide Metropolitan Taxi-Cab Board, essential though they are in the Festival State, have got the heave-ho from the leading international rail directory. The listing of Australia's railway suppliers, while still incomplete, is very much better than in past years, and still improving. Although quite expensive, this book is indispensable for the railway person with a need to know the right answer quickly. *Highly recommended.*

Railways of Australia Year Book 1984 and Personnel Directory. RoA Committee, Melbourne, A4 20pp, full colour. Free on Application.

Those who can't afford $50 or who aren't madly interested in the Austrian Montafonerbahn, may need to know who's who and what's what on the local scene. If so, they will find this new RoA publication an invaluable reference aid. Superbly presented in a full-colour A4 format, it lists the five RoA systems — but not the metropolitan railways — and for each one, provides general particulars, key officers, a map, and key statistics of size, revenue, traffic, finances and equipment.
The illustrations include the leadership of each system and the photos — all recent, and mostly hitherto unpublished — highlight each system's performance.
You can even work out the 1982/83 operating ratios, which are AN-155%, QR-120%, SRA-176%, V-Line-274%, and Westrail-106%. (If you don't know what an operating ratio is, don't worry; if you do, don't fix the Editor. Help fix the ratio instead).
The RoA Year Book also lists the five major privately-owned systems in Australia, their kilometrage and equipment, and their key people. Tonnage data means ore sales and is more sensitive.
These entries round off an indispensable aid for updating a Christmas card list, shunting figures into a quick speech, or identifying that distinguished-looking fellow up there on the dais with the Minister. And it's free. *Highly recommended.*

Comeng — Rolling Stock Division of the ANI Corporation Limited. Published privately by the firm. A4 size, 104pp, art paper with plastic binding, all illustrations in colour. Not on public sale.

Some magazines list "catalogues received"; few dare to review them. There are problems of definition, space-finding and preserving equity. Marketing Directors feel offended or ignored, and ring up the boss. Relationships between the Editorial and Advertising Department are strained.
Yet occasionally a catalogue stands out as a significant railway publication in its own right — and commands attention for review on that basis.
Comeng is one such publication. It is a very high quality, and no doubt very expensive, "glossy". Largely the work of John Dunn, the firms' concept designer (whose book *Modern Trains* we reviewed three years ago), it is entirely factual and free of advertising material.
It is also very informative, introducing the firm's factories, departments, and activities by collages of excellent colour photographs, and then describing recent locomotive, rolling stock, and maintenance machinery produced.
To do this, a consistent format is used : half-page colour photo, textual description, and overleaf, line drawing and numerical data (for locomotives, a tractive effort curve as well). No clients are mentioned by name, nor are dates and numbers ordered given; the NSW XPT is thus a "high speed diesel electric power car" in the locomotive section, and a "high speed push-pull train set" in the carriage portion.
The overall impact of this understated, rather deadpan, approach is highly professional and the text, photography, editing and production carry that impression through.
The result is a useful technical reference book, as much as a catalogue. A book that is thoroughly Australian in its emphasis, and a credit to private sector enterprise.
As the competition is sure to have seen *Comeng* by now, we'd seriously suggest that ANI-Comeng consider putting their book on public sale as a service to the railway community.
It is too expensive to give away, but if people are prepared to pay fifteen dollars for a 1982 Comeng calendar in 1984, this book should sell for twenty-five.
And who knows? . . . the firm might make money from selling catalogues!

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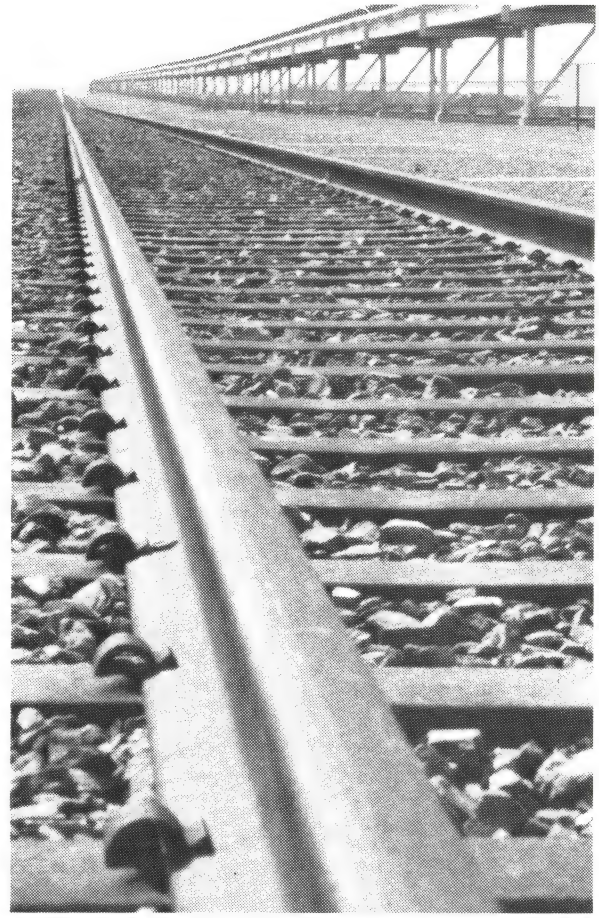

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AMTRAK prepares new passenger 'breed'

Sometime near the end of 1985 or perhaps in early '86, America will see the prototypes of a new generation of railway passenger cars, which will be the first designed from the very beginning to Amtrak specifications. (A blueprint of the new cars appears below.)

Designed for use primarily on long-distance trains in the East, these new cars, though single-level, will have two rows of windows and will look quite different from anything that has operated before on U.S. rails. By the turn of the century, there may be hundreds of them in use.

Amtrak's fleet of some 2000 cars is now in the best shape since the National Railroad Passenger Corporation took over most of the country's intercity passenger service some 13 years ago. From the Amfleet cars used in the 120-mph Metroliner service in the North-east to the double-deck Superliners on the long-distance Western routes, much of Amtrak's equipment was manufactured in the last few years. Still, the designs of both types of cars were modifications and improvements of cars developed for predecessor railroad companies.

The forerunner of the Superliner was the Hi-Level car built for the Santa Fe line in the mid-1950s. The comfortable single-level Amfleet cars, which Amtrak mostly operates in the East, were an adaptation of the original Metroliner cars built for the Penn Central Railroad in the late 1960s.

Still in use are hundreds of Heritage Fleet cars, completely rebuilt by Amtrak but still dating back to the late 1940s. All sleeping cars and dining cars used by Amtrak in the east were originally built for the privately owned railway companies from which Amtrak took over passenger service in 1971.

Although Amtrak has spent up to $450,000 per car to rebuild the older equipment, making it completely compatible with its new, all-electric cars, there will come a time when many of these Heritage cars will be ready for replacement. Says Amtrak's Charles J. Engelhardt, senior director of equipment engineering, "Amtrak is in a unique position in that we have breathing space in our requirements for passenger cars."

One of Mr. Engelhardt's responsibilities is to provide the new generation of cars, designed from the very beginning for Amtrak's requirements as anticipated at the end of the century.

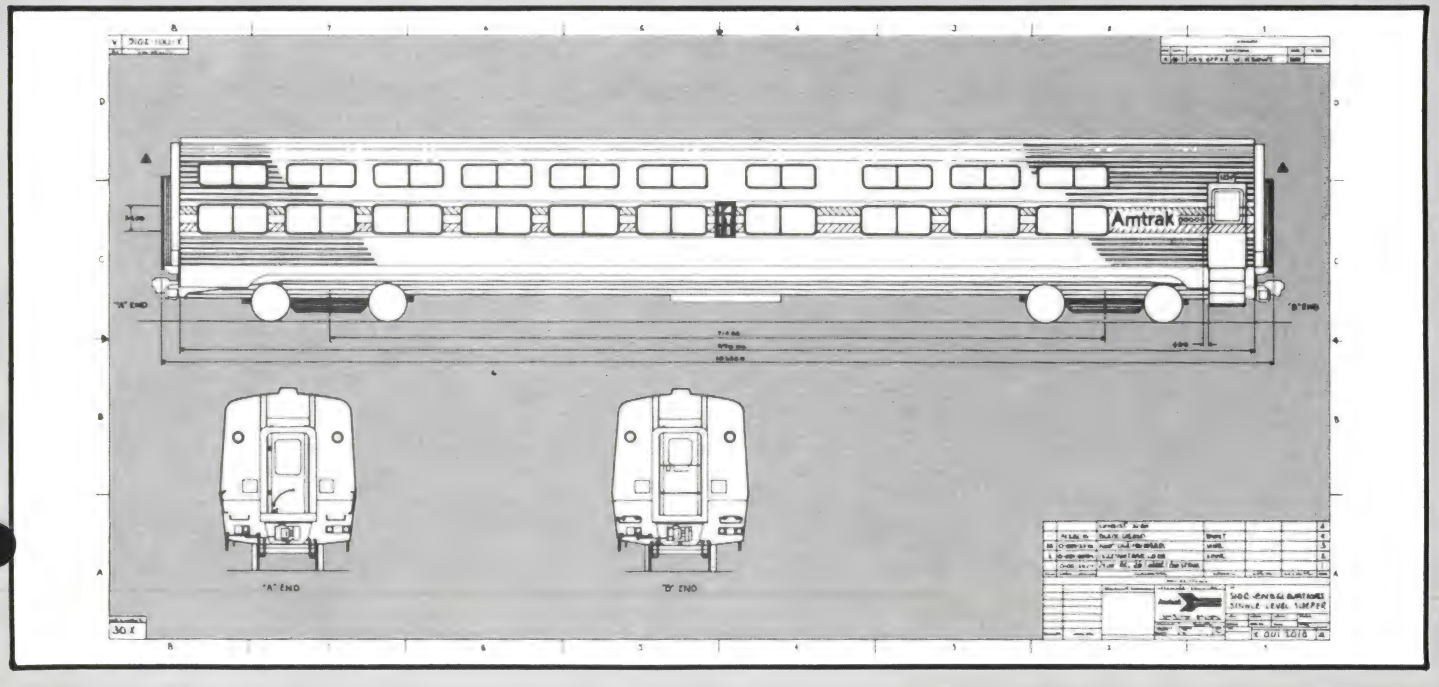
First step was the decision made two years ago by Amtrak President W. Graham Claytor, Jr., to build three prototype cars. These will be in service for 18 to 24 months so "we can get all the bugs out and write the final specifications for production," Engelhardt explains. Engineering and design work has been done in Amtrak's Washington headquarters, and three "car shells" are now being built by the Budd Company, which previously manufactured Amtrak's Amfleet cars. Upon completion, the shells will be taken to Amtrak's Beech Grove, Indiana, maintenance facility, where the complete cars will be assembled and outfitted.

The three cars include a dining car and two sleeping cars. All will be about the same height as Heritage cars, but will be wider and more streamlined. During actual operation, Amtrak will test new air-conditioning and heating systems and also experiment with different suspension equipment "to develop the smoothest, most comfortable ride possible."

For the first time with Amtrak, interior accommodations will be in the form of modules, made of fibreglass, and with plumbing, wiring and carpeting installed as units. How good will the new equipment be?

"As far as long-distance equipment goes," says Engelhardt, "what we're putting together here has no equal in the world. In fact, what we have right now, the Superliner, has no equal in the way of long-distance passenger service and comfort."

Kindly reprinted from AMTRAK Express.



AN's Keswick terminal open for business

All involved must play their part if Australian National Railways is to win increased passenger and freight traffic so vital for its viability.
This was made clear in a speech by the Federal Minister for Transport, Mr Peter Morris, at the opening of Australian National's Adelaide passenger terminal at Keswick in June.

Left: The Adelaide Rail Passenger Terminal's platforms are connected by underground subways. Below: Taxis and buses provide easy access to the city and environs.

Above: a part of the comfortable air-conditioned lounge at the Adelaide Rail Passenger Terminal. Right: A computerised booking system operates at the terminal.

"The completion of this passenger terminal is symbolic of Australian National's determination to improve and modernise in order to meet the challenges of the future," he said.
"The challenge is enormous, but for those of us who are believers in the railways, I sense a feeling of satisfaction when such positive steps are taken to meet that challenge," he said.
Mr Morris said that whenever he visited Australian National in South Australia, his message was clear.
"The Federal Labor Government is committed to the development of an efficient and effective Australian National and is determined that it should become a leader in the national railway network," he said.
The Federal Government has already passed legislation aimed at making Australian National more competitive and commercially oriented.
"I stress though that with this extra freedom goes the responsibility to take up the challenge," he said.
"There must be clear recognition that unless Australian National improves its efficiency, it is not going to share in the economic growth now taking place," he added.
The completion of this passenger terminal is symbolic of one very important change in Australian National's whole operation — and that is its determination to improve and modernise in order to meet the challenges of the future.
In the face of many legacies and obstacles we can see here today tangible proof that Australian National has grasped the nettle of developing a modern railway system capable of playing its role in a highly competitive national transport system.

The challenge is enormous, but for those of us who are believers in the railways, I sense a feeling of satisfaction that a positive step has been taken to meet that challenge.

Whenever I visit Australian National in South Australia, whether it be here, at Port Pirie, Port Augusta, Peterborough or other locations, and talk to union officials or rank and file, I carry one simple message, which is that our Government is committed to the development of Australian National and is determined that it become a leader in the national railway network.

These are not simply words to be forgotten as soon as this ceremony is completed, some here have heard the message before and I can assure them, they will hear it again and again.

Since coming to office we have already legislated to free Australian National management from many of the government ties and shackles which previously limited management initiative.

The legislation provides that where Australian National undertakes services at Government direction it receives appropriate compensation. It enables Australian National to be more competitive and commercially oriented.

I stress though that with this extra freedom goes the added responsibility to take up the challenge.

Needless to say this means that on occasions difficult decisions must be taken and the move to this location is one already made by AN. There must be clear recognition that unless Australian National modernises its operational practices, improves its reliability and its competitiveness then it is not going to hold its market share, let alone participate in the economic growth that is now occurring.

As I have also said many times before, railways cannot be complacent and expect taxpayers to go on funding losses without some reasonable prospect that these will reduce.

Railways must adapt quickly to the realities of the market place.

In planning modernisation, in restructuring and in introducing change it is vital that full consideration be given not just to the impact upon individual people, but also on communities.

It is vital that all those affected understand, recognise and participate in the change that must occur if Australian National is to survive. Their own future security is tied up with the health and well-being of a strong and viable Australian National.

For some I know early voluntary retirement is particularly attractive and that is one matter we are actively working on. For others the problems are related to relocation and restructuring of tasks and functions which because of the past failure to change, take on an air of permanency which must ultimately be artificial.

Simply put — the old era and its past complacency must end. We now have a modern standardised track linking all mainland capital cities.

We have a demanding and discriminating public who expect services of a high standard at a reasonable cost : and who at the same time have other transport options readily available to them if AN fails to meet their needs.

Our Government and the vast majority of AN employees want AN to prosper.

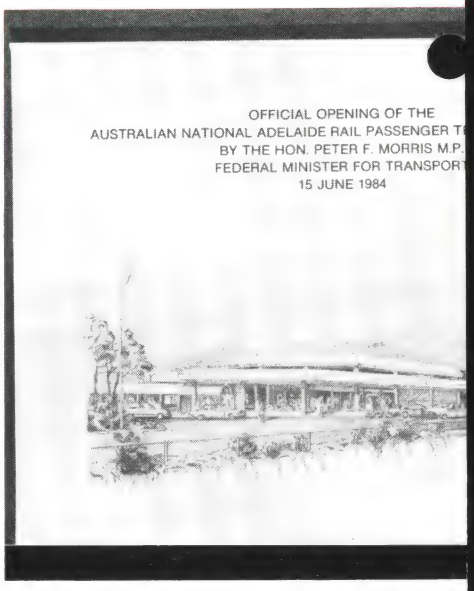
Having spoken to so many people here today and previously in Peterborough, Port Pirie and Port Augusta I am confident that this is going to happen.

Railways have traditionally been the mainstay of our transport system. They have played a fundamental role in the development of our country and have been the career and livelihood of generations of loyal, dedicated and hard working Australians.

I have a great personal regard for rail workers, and a respect for their special skills, expertise, determinations and loyalty. I want to see Australian National lead the way to a better future for Australian railway systems, a future we can achieve together, employees, the Commission and Government.

Good communication is absolutely essential. Our Government is committed to consultation with communities and rail unions on matters that affect them. Australian National has my strong support in its program of similar consultations.

Unions have an obligation to protect their members' interests and to see railways prosper. They have also demonstrated they are prepared to put forward positive proposals that can help in the development of railways.



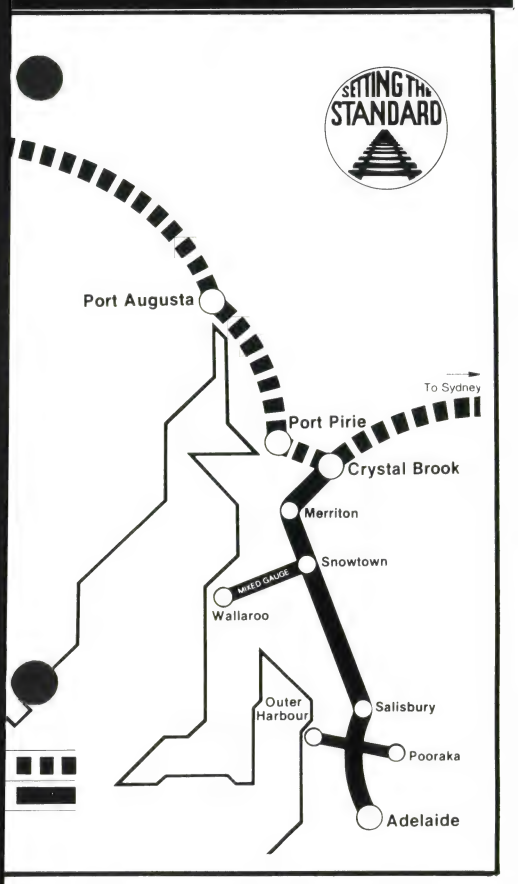
As a result of the consultations I initiated there is a proposal to establish a Rail Industry Council in which all rail unions, governments and railway administrators can collectively address issues facing rail systems.

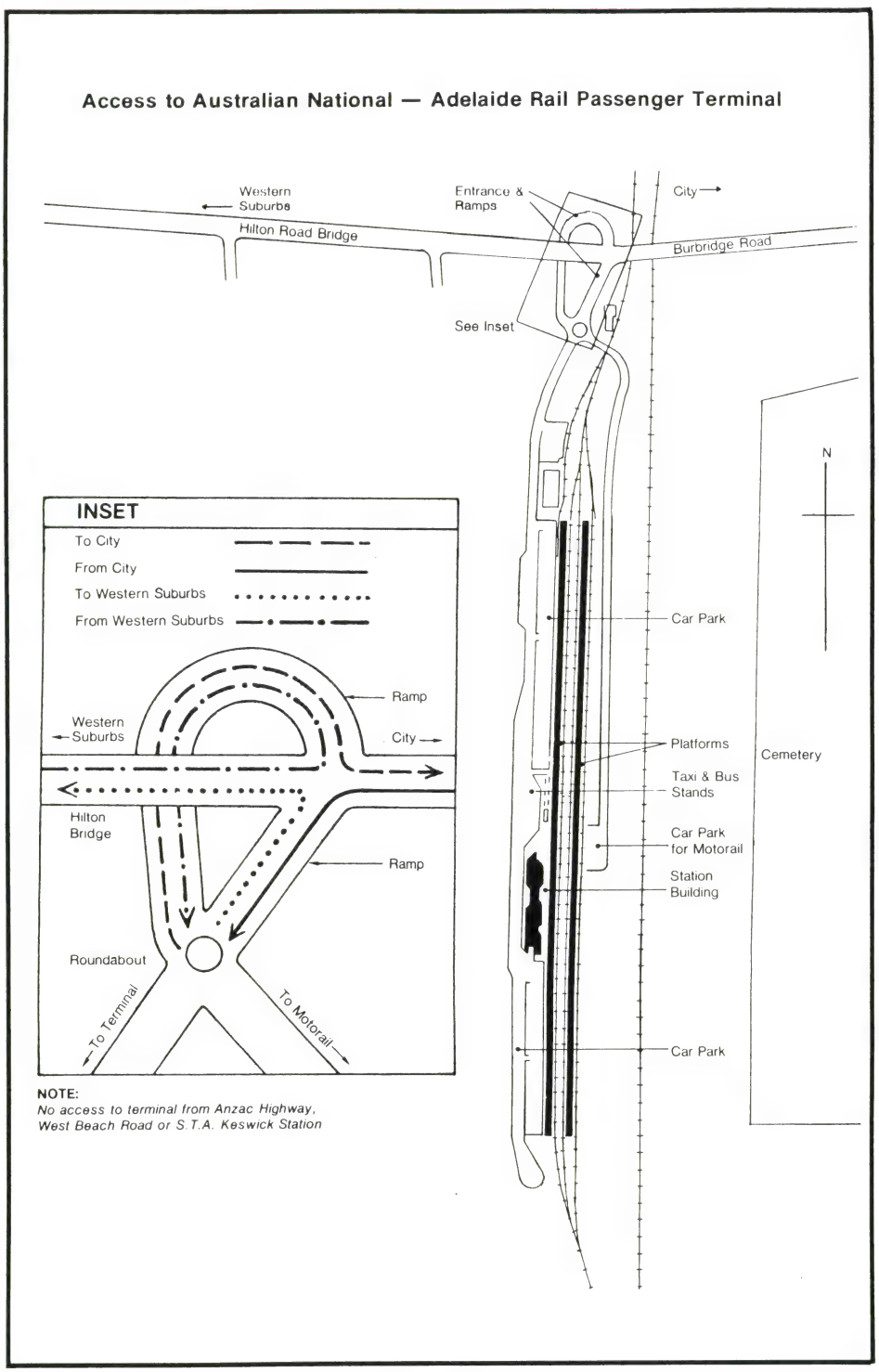
I am actively supporting this proposal and will be discussing it with the ACTU and some of my State ministerial colleages next week.

The dedication of Australian National employees is an excellent base from which to build a revitalised and more effective national rail system.

I believe we all share a common objective — the development of a financially healthy and successful Australian National.

It is the Government's hope that with sound leadership, good management, good communication with rank and file, and acceptance of the task in front of us, that Australian National will emerge as a





leading force in the Australian transport system.

I congratulate Australian National for its enterprise in completing this terminal.

I join you the Chairman in praising the designers, the contractors, the organisations and especially the workers whose combined efforts have built this fine terminal and associated facilities. I recognise that there have been some teething problems in the commencement of operations but they are problems that are being overcome."

Australia Post issued a souvenir envelope with a special pictorial cancellation to commemorate the official opening of the new Australian National — Adelaide Rail Passenger Terminal.

The envelope displays an artist's impression of the new rail terminal and is worded 'Official Opening of the Australian National Adelaide Rail Passenger Terminal, Keswick by The Hon. Peter Morris, MP, Federal Minister for Transport, 15 June, 1984.'

The 22cm x 10cm envelope included an Australia Day postage stamp and a postmark denoting an AN locomotive with the wording 'Opening — Rail Passenger Terminal', Adelaide, SA 5000, 15 June, 1984.

The envelopes are available for 45 cents at all SA philatelic sales centres or by mail from the Philatelic Mail Order Section, Australia Post, GPO Box 9988, Adelaide, SA 5001.

A souvenir wine was introduced by Hamilton's Ewell Vineyards Pty Ltd, to mark the official opening.

The wine is a 1980 vintage Mildara Coonawarra Shiraz and Cabernet.

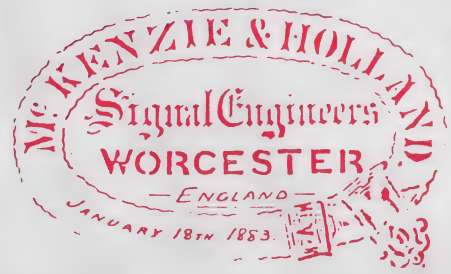
Its specially designed green, gold and white label portrays an AN passenger train — the first ever to have appeared on a wine label.

Bottles of the wine were presented to guests attending the opening of the Adelaide Rail Terminal.

RAILWAY SIGNALLING HISTORY

By a Special Reporter

The title block (illustrated) is a copy of that appearing on an inked linen tracing, in excellent condition, held in the Drawing Office of the Chief Signal and Telecommunications Engineer, Queensland Railways.
The format of the title block, the name of McKenzie and Holland and the date of the drawing, truly suggests these are the ingredients of an interesting historical presentaion.
Recognising the very different levels of engineering technologies, communications and organisational difficulties which engineers and entrepreneurs had to cope with in the second half of the nineteenth century, the development of the McKenzie and Holland Company and the technologies upon which its operations were based, and for which it became famous throughout the world, make interesting, if not fascinating reading.
It is, perhaps, appropriate to note that the company development has to be viewed in the context of the opening of the first steam worked public railway in England on the 26th September, 1825, when the engine, "Locomotion", driven by George Stephenson, first ran between Stockton and Darlington.
Some 16 years later, in 1841, a Mr Hutton Gregory, engineer on the London-Croydon Line, adapted the established design of Pasley's apparatus used by H.M. Royal Navy for message exchange, to design, construct and erect at New Cross, South london, the first semaphore signal for railway use.
In 1859, a partnership was formed to purchase the Vulcan Iron Works in Worcester, England, the company being established as "Engineers, Millwrights, Brassfounders and Plumbers", engaged in the manufacture of "iron girder bridges and railway work in general".
The first specification of true interlocking between signals, namely, "the movement which is dependent upon another, cannot even commence until such other movement has been fully completed", was the subject of a device patented in 1860 (Patent No. 31) by Mr Austin Chambers, an employee of the North London Railway.



In 1861 and 1862 respectively, Walter Holland, previously employed by the Oxford, Worcester and Wolverhampton Railway, and John McKenzie, previously locomotive superintendent of the West Midland Railway, joined the Vulcan iron Works partnership, and the company became known as McKenzie, Clunes and Holland.

Manufacturing rights secured

In 1862 the company was successful in securing the sole manufacturing rights for the period to 1867, for the patented Chambers design of locking frame (Patent No 31). This development proved to be so successful that a large new factory was built in Worcester to accommodate the business which arose.
In a parallel development during the same year, John Saxby, who was operating in partnership with John Farmer, took out Patent No. 1754 for a mechanism which carried out the true principle of interlocking of points and signals. This patent did not, however, include the principle of the Chambers Patent No 31.

Name change

The change of the Worcester company name to McKenzie and Holland occurred in 1865, and the following year, the company took out a further patent, No 1963, for interlocking between levers.
A year later, in 1867, the company experienced something of a setback, when the rival organisation, Saxby and Farmer, purchased outright, the original Chambers Patent No 31, for the sum of 2,000 pounds Sterling.
During this period in the far away United States of America, a young George Westinghouse was serving as a junior engineer in the Navy of the Union Forces during the American Civil War (1861-1865).
In 1869, at the age of 22, George Westinghouse was working as a salesman, and in his spare time, he designed and patented the first compressed air brake for railway coaches. This device having been successfully tested in April of that year on the Pittsburg, Cincinatti, Chicago and St. Louis Line (commonly known as the "Panhandle Division"), enabled George Westinghouse to form the Westinghouse Air Brake Company, Pittsburg, Pennsylvania, manufacturing air braking equipment for the Pennsylvania Railroad.

New developments continue

The next significant signalling development was that in 1875, when W.R. Sykes patented the lock and block system of working.
Signalling technology and production capacities were sufficiently well advanced and developed by 1878, to justify the long sea voyage to Australia by William J. Griffiths of McKenzie and Holland, for the purpose of organising a display by the firm at the International Exhibition of 1879-1880. The Exhibition is recorded as having been a great success, and the McKenzie and Holland exhibit was described in "The record" as "working models of railway station and junction, illustrating the interlocking and working of points, signals and level crossing gates on railways". The exhibition judges were reported to have commented that, "this arrangement of interlocking etc. has the merit of great efficiency combined with moderate cost".
In 1880, Mr W. Liley took up permanent residence in Australia as the official McKenzie and Holland representative, and was soon successful in securing a commission for the company to design, manufacture and install an interlocking system at the Campbelltown Junction of New South Wales Railways.

In the same year, the rival company, Saxby and Farmer, exhibited at the Melbourne International Exhibition, and won an award. Also in 1880, George Westinghouse invented a pneumatic system of interlocking signals.
George Westinghouse was responsible for many significant engineering developments and on the 7th July, 1888, he paid US$1 million to secure exclusive rights to the patents plus royalties on equipment produced for the alternating current induction motor, a patent for which had been taken out on the 1st May, 1888 in the USA by a Croatian, Nikola Tesla.

Queensland Railways play vital role

The "Semaphore Iron Works" was established by McKenzie and Holland on 2 acres of land at "Spottiswoode", in Victoria, under the control of Sidney P. Wood, and in 1888, the then Government of Queensland, extended an invitation to McKenzie and Holland, to establish a works in Brisbane for the manufacture and supply of railway signalling equipment. Within 12 months, arrangements had been completed for the survey of land at the then Northgate Terminus of the Brisbane railway system, after which, an area of land in excess of 1 acre was granted to the company as a site for the new works.

After negotiations, a 3 year contract for the supply of signalling equipment was signed on 1st July, 1890, between Queensland Railways and McKenzie and Holland, under which the Northgate factory traded as The Toombul Iron Interlocking Works.

The next major development in the Company's history, was the acquisition of the patents relating to electropneumatic signalling systems previously owned by the Westinghouse Brake Company Limited of London, which was then a subsidiary of the Westinghouse Air Brake Company of Pittsburg, Pennsylvania, USA.

In 1900, George Westinghouse entered into arrangements with McKenzie and Holland, resulting in the subsequent amalgamation of the two companies.
During the period before the final amalgamation of the two companies, there was a further rationalisation within the industry under which McKenzie and Holland, Saxby and Farmer Ltd., Dutton & Co. Limited and Evans & O'Donnell & Co. Ltd. all jointed together to form Pneumatic Electric & General Engineering Company Limited.
The final rationalisation took place in 1907, when McKenzie and Holland Limited combined with the Westinghouse Brake Company Limited to form McKenzie, Holland & Westinghouse Power Signalling Company Limited, with the objective of developing the business of automatic power signalling with pneumatic equipment manufactured by Westinghouse at their Kings Cross, London, premises, and the mechanical equipment manufactured by McKenzie and Holland at Worcester.

Operations expand

In the meantime, the Spotswood, Victoria, and Northgate, Brisbane, manufacturing plants continued to expand their operations, and in 1909, the Northgate property was extended with the purchase of an additional 4 acres of land.
Early in 1914, the capacities of the Northgate, Brisbane factory were augmented to facilitate the production of electro-pneumatic signalling equipment to Queensland Railway requirements. Under a QR contract awarded in 1915, the company re-signalled Brisbane Central Station and provided a 12 lever extension of the then existing electro-pneumatic interlocking machine, and the whole system was relocked.
Subsequent QR contracts executed at the Northgate factory included the 120 lever frame for Mayne Junction and a 65 lever frame for Gympie.

Modern technology introduced

As part of the Brisbane Electrification project, the electro-pneumatic signalling systems at Central and Mayne were converted to all electric signalling systems and controlled from the Mayne Control Centre. The electro-pneumatic signalling system at Gympie was replaced by an all electric signalling system as part of a computer based centralised traffic control system.
In 1920, McKenzie and Holland transferred the remaining plant and equipment from the Worcester factory to the Chippenham, Wiltshire, works of the then Evans & O'Donnell premises, and the McKenzie and Holland, Worcester, factory and offices were closed down.
The company structure in Australia continued to develop and diversify, eventually covering railway signalling, railway braking, permanent way and hydraulics areas of railway and general industries.

Activities at the Toombul Iron Interlocking Works (Brisbane), developed and diversified from the original signalling base, and factory capacities were augmented to include iron and steel foundry facilities, forging facilities and general fabrication, machining and assembly, together with those for specialist railway trackwork production.
During the development of the Northgate, Brisbane factory, the product range included horse-drawn graders, rock crushing plants, and marine and industrial diesel engines, as well as the broad range of railway products. Particular projects of note included the complete design and manufacture of a steel girder bridge installed on the Beaudesert railway line, the manufacture and supply of all the rivets used in the construction of the Brisbane Storey bridge and the painters' gantry installed and still in use on the Sydney Harbour Bridge.
Concomitant with this development, the Semaphore Iron Works factory of McKenzie and Holland in Spotswood, Victoria, progressed from the original mechanical signalling base to become heavily involved in the design and manufacture of a wide range of electrical signalling including colour light signals, train stops and relays.
From this strong background, and with the benefit of research and development connections with Westinghouse Brake & Signal Co. in England and Union Switch and Signal in the USA, the Melbourne factory and design office has progressed to develop "state of the art" computer based signalling and traffic information systems. Operating since 1951 as a Division of Westinghouse Brake & Signal Company (Australia) Pty Ltd, there has been a long and continuing relationship with the various Australian Railway Systems.

Electrification... the

By Jean Alias
of the S.N.C.F.

Because of its many qualities but especially in regard to power and flexibility, electric traction was first introduced in France some sixty years ago in mountain areas with plentiful supplies of hydroelectricity.
At the outset, the then different French railway companies adopted 1 500 V d.c. current because of its suitability for series motors (virtually ideal for traction purposes).
This type of current was preferred to special low frequency 16⅔ Hz A.C. ~~current~~ which, like the d.c. current, would have required special sub-station supply installations in addition to the use of commutator series motors with all the problems that that would have entailed.
Electrification continued through to about 1950 with the large-scale development of d.c. current on certain very busy lines.
Subsequently, as a result of numerous experiments carried out at the instigation of Louis Armand, 25 kV single phase a.c. current was introduced using either specially designed 50 Hz motors or d.c. motors with the current converted on the locomotive itself, first by means of ignition rectifiers and later using dry rectifiers (diodes or thyristors).
This type of current avoids problems caused by any imbalance in a mesh network and is a better economic proposition by far in that the distance between sub-stations is greater, with more compact installations and smaller cross section copper wire.
In addition, the design of the contacts used for the traction motors results in better adhesion and, therefore, improved performance in relation to other types of current supply.
The SCNF decided, in consequence, to adopt this type of current for its further electrification work, although some sidings or shorter feeder sections linking lines already electrified were still equipped for 1 500 V d.c. current.
These two types of electrification can exist side-by-side on the same network without difficulty, especially since the development of dual-current locomotives and by using insulated sections to pass from one type to the other.
As the cost of primary energy, especially that based on petroleum, has surged, railways have been driven to electrify, since the threshold in terms of tonnage beyond which electric traction is more economic than diesel is becoming lower all the time.
Moreover, the greater the volume of traffic, the quicker electric traction installations begin to pay for themselves in view of the lower unit cost per tonne/kilometre or passenger/kilometre.
In France, all decisions to electrify lines are based on a discounted cost/benefit analysis, taking account of the cost of the fixed installations required, maintenance costs, the life span of the fixed equipment and rolling stock and current lending rates.
As a general rule, lines handling from 8,000 to 10,000 tonnes per day fall into the electrification category.
With the development of silicon rectifiers, supply sub-station for all types of current can be built to a far smaller scale.
In the past, costing exercises had to be carried out to establish a choice between grouping together sub-stations or spreading them out along the line. Nowadays there are more sub-stations spread out along the line than strictly necessary in order to keep some power in reserve should one of them be out of action.
The newly-developed so-called "2 x 25 kV" power supply technique already applied on the new Paris-Lyon line will doubtless be used further in the future because of the resulting savings in areas with limited HV current supplies and the reductions in electromagnetic interference in the vicinity.
With this type of traction current, smaller insulating clearances are required than with 50 kV and interference is kept to a minimum by the simple expedient of laying a feeder cable and installing a few autotransformers. Insulated sections between the different overhead line supply sectors can be used for bypassing or parallel-connecting sub-stations, should the need arise.
In addition, the sub-stations are connected together in such a way that, should a short-circuit occur in one, those either side are disconnected immediately.
Most of our electrified lines have automatic block sections with track circuits whereby the return current passes through both rails to restrict interference in the signalling systems, enable broken rails to be detected and eliminate any risk of electrocution for track maintenance gangs.
Systematic use of dual-current engines, and even multi-system engines, has simplified problems of connection between two types of current. Passing from one type of electrification to the other is ensured by an insulated section approximately one hundred metres long, earthed and crossed, the pantograph being in a lower position on the locomotive.
It is even planned that, in the near future, in a dense suburban area and owing to the use of e.m.u. trains equipped with several pantographs not interconnected, automatic lowering and raising of each pantograph will be ensured.
Similarly, in single-phase current electrification, the crossing of two areas of catenaries supplied in different phases, is ensured by an insulated section crossed with mere cut-off of power on the locomotive with lowering of pantograph(s).
Except in the case of the above-mentioned automatic operations, the

French connection

equipment (pantographs, locomotive circuit-breaker) is controlled manually by the driver on the basis of information given by the signalling system.
The standard 1,5 kV d.c. overhead line for speeds up to 200 km/h consists of the following elements:

- a main carrier cable of cadmium bronze with a 116mm² cross-section,
- an auxiliary carrier cable of electrolytic copper wire of 104m² cross-section,
- two contact wires of electrolytic copper or cadmium with a 107mm² cross-section each.

This represents an equivalent copper cross-section of 396mm².
Carrying cables can also consist of aluminium-steel cables with 227.8mm² cross-section for the main carrying cable and 178.1mm² cross-section for the auxiliary carrying cable.
The auxiliary carrying cable is hung to the main carrying cable by means of hangers of 7mm diameter round copper wire wire every 4.5m.
Contact wires are hung to the auxiliary carrying cable by means of at copper hangers in the form of clamps every 2.25m and fixed alternately on one contact wire or the other.
Only mechanical tension of contact wires is adjusted.
In areas requiring a larger equivalent copper section, one or several feeders of 145.8 or 216mm² copper section or of 288.35mm² aluminium-steel section, can be added.
The catenary is suspended to the bracket by means of a suspension chain with cap-and-pin insulators of porcelain or hardened glass.
The catenary is maintained in a vertical plane by the registration arm consisting of a galvanized steel tube insulated from the mast and auxiliary carrying cable by means of a cap of porcelain or hardened glass.
Contact wires are maintained in a given position as compared with the theoretical axis of the pantograph (staggering) by means of a drawback arm insulated with a synthetic insulator articulated on the registration arm.
The catenary generally used on 25 kV a.c. lines and in particular for the TGV (high speed train), consists of the following elements:

- bronze 65mm² section carrying cable.
- electrolytic copper contact wire of 107mm² or 120mm² section.

Both conductors are connected by copper cable hangers of 12mm² section, with a maximum spacing of 9m.
The mechanical tension of each conductor is 1,200 daN or 1,500 daN. It remains constant between temperatures ranging between −20°C and +60°C through tensioning devices with pulley-block connected with one or two conductor(s).
The carrying cable can also be a 93.3mm² aluminium-steel cable. Thus, its mechanical tension is 1,000 daN and hangers consist of a 4mm diameter stainless steel wire.
The assembly is completed with a stitch wire suspension consisting of a 35mm² tin bronze cable, 15m long, connected with the carrying cable at the level of each mast.
An earthing cable 93.3mm² section aluminium steel-interconnects masts and protects both installations and staff.
The bracket and bracing wire consist of galvanized steel tube, dimensioned according to force imposed. These tubes are rigidly locked with the cap of insulator; the cap is either a porcelain solid core type or a rigid hardened glass cap and pin type.
The contact wire is fitted to each mast in a given position as compared with the theoretical axis of the pantograph (staggering), with an articulated drawback arm articulated on a registration arm, also articulated, on the bracket near its insulation.
Both types of catenaries can be simplified according to the category of line.
Electric cut-off of the catenary is ensured either by insulated overlap (both contact-wires are laid parallely as from the electrification of the line) or by line insulators (equipment manufactured in workshop and installed upon request).
The first extend over some 20 metres on average whilst the second cover a very short distance (a few metres).
At present, line insulators are only used on tracks with a maximum speed of 120km/h.
French Railways are now experimenting with a line insulator suitable up to 200km/h.
If this experimentation works out favourably, this equipment will be the only type to be used in the future.
Main rules for proper earthing or earthing through the rail, either direct or through discharge gap, are as follows:

In 1,500 V direct current electrification

No special precaution is taken in open track to determine the potential of catenary masts as compared to earth or rail.
In areas accessible to the public (station platforms, metal parts of station and bridge roofing etc) metal structures liable to come into contact with the catenary are connected with rails across a discharge gap (to allow mainly for quick cut-off of supply in case of undue contacts, defective insulators etc.).
Connection with rails is ensured in most cases with track circuits through both rails in the middle point of a self induction coil or an impedance bond.
The object of a discharge gap — instead of a direct contact — outside cut-off periods is to avoid earthing rails and thus avoid electrolysis phenomena due to return of current liable to follow underground metal structures (water, gas pipes etc.).

(continued on page 52)

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HELPING ADVANCE AUSTRALIA'S RAILWAYS

CENTRAL QUEENSLAND

Queensland Railways Main Line Electrification Project for Central Queensland has taken several giant leaps forward since our last report (Network, March to May issue).

On July 23, Queensland Premier Sir Joh Bjelke-Petersen and Transport Minister Don Lane journeyed out to Comeng's Salisbury (Brisbane) plant to announce successful tenderers for the 146 electric locomotives required for the giant electrified rail scheme serving most of Queensland's major coal mines.

Later that same day Mr Lane attended a special function in Maryborough to confirm the news.

The contracts were awarded as follows:

To Commonwealth Engineering (Qld.) Pty Ltd for the supply of seventy-six 25kV, 3000kW locomotives at a cost of $97.8 million.

A further seventy 25kV, 3000kV locomotives to be built by Clyde/ASEA-Walkers joint venture partnership at a cost of $90.9 million.

Mr Lane said Commonwealth Engineering had a proven record of rollingstock manufacture in Queensland and had a tremendously successful involvement in the manufacture of diesel locomotives and general rollingstock.

Walkers-ASEA in Maryborough were already building the electric rail cars which had proven so popular on the Brisbane suburban electrification project.

The Minister said the combined orders for 146 locomotives was the biggest contract for the construction of rollingstock at one time in Australia's history.

Mr Lane said the awarding of the contracts to two firms would see the work shared on an extended basis in many areas of the State, creating employment through extensive sub-contracting.

Expenditure of $189 million would create 107,800 man weeks of employment, he said.

Government OK's Stage 2 of Project . . . 3 Large Contracts Awarded for Stage 1.

At the end of June last, the Government gave the go-ahead to the commencement of Stage 2 of the project. (Stage 1 is the line from Gladstone Port to coal mines in the Blackwater area, Stage 2 commences at Hay Point/Dalrymple Bay, just south of Mackay and runs inland to the Goonyella mines system, and south to Blair Athol and to Gregory, linking up with Stage 1.

All told, 1000 route kilometres for both stages are involved, or a total single-track kilometerage of 1493.)

Contracts for Stage 1 were awarded as follows:

$34,124,037.14 for overhead traction wiring to Electric Power Transmission Pty Ltd, Brisbane.

$8,786,958.00 for supply and erection of power supply transformers to GEC Aust. Ltd ($2,845,318) and Tyree Electrical ($5,021,640).

$5,398,766.00 for the design, manufacture, supply and erection of 50kW/25kV switchgear to GEC Aust. Ltd, Brisbane.

Frank Bell, Divisional Engineer (Rockhampton) o

Prospective tenderers are briefed at Hay Point coal loading complex. This along with the adjacent Dalrymple Bay complex will be the terminating point for Stage 2 of the electrified Coal lines.

Prospective Tenderers see Stage 2 at first hand: On 27th and 28th July, a party of some 50, comprising representatives of engineering and construction companies registering interest in contracts for overhead traction

ROJECT ACCELERATES

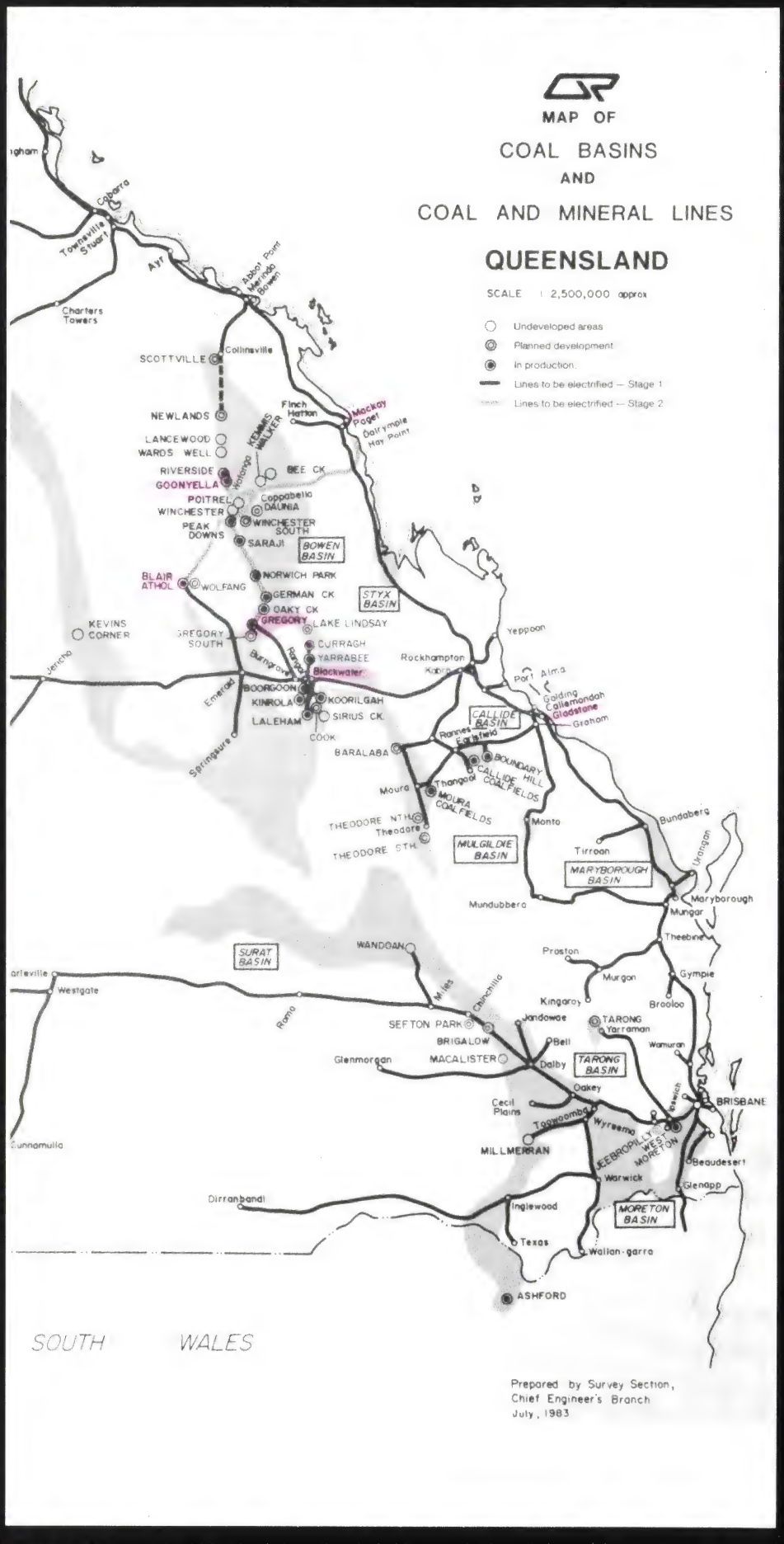
rack and topographical features to the party.

wiring and construction of cable route surveyed the complete 773 single track route in company with QR senior engineers, headed by Project manager, Ross Dunning.

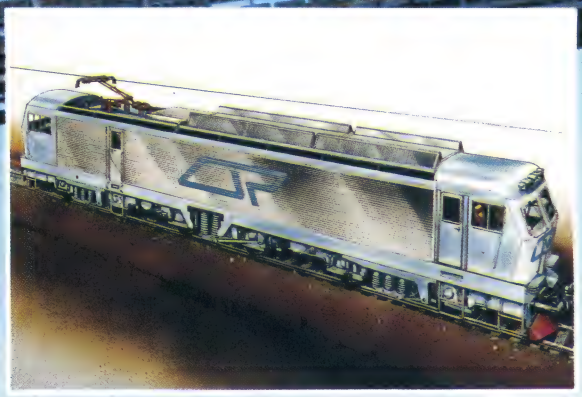
On the second day, the group journeyed south from Peak Downs mine to German Creek and Oaky Creek, then on to Blackwater, joining up with Stage 1 of the project.

A closed circuit TV camera was mounted on the leading locomotive transmitting a continuous picture of the line ahead onto monitors set up in the sitting cars.

These, combined with physical inspections of the track and mine 'coal load-outs' where appropriate, gave the prospective tenderers a most comprehensive over-view of the project.

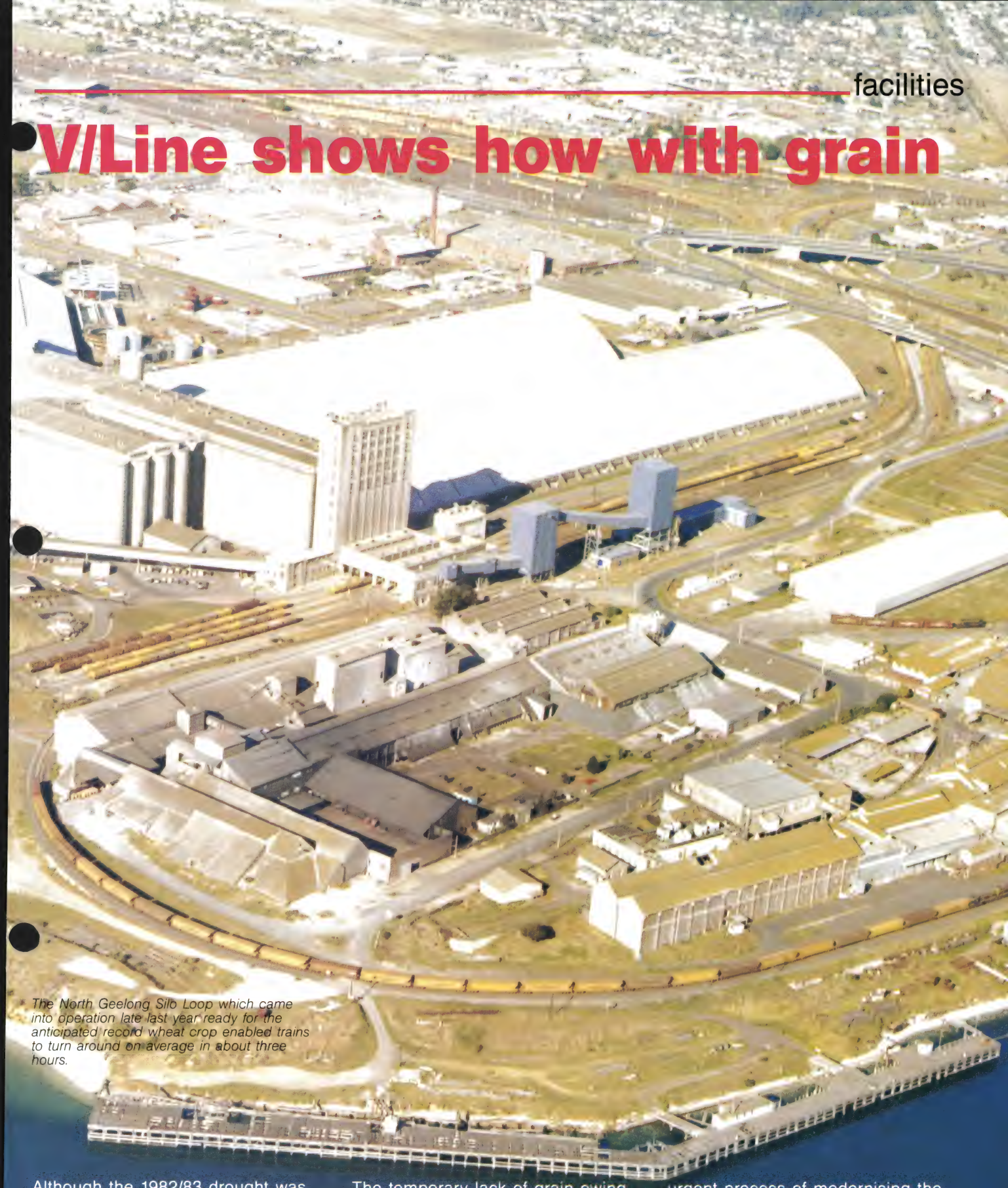


See pictures next page.



Top: Artist's impression of 25kV, 3000kW locomotive by Clyde/ASEA-Walkers of Maryborough. Above: Model of 25kV 3000kW locomotive by Commonwealth Engineering (Qld.) Pty. Ltd.
Main picture: Tour party train is dwarfed by huge coal load-out (capacity 3000 tonnes) at Blair Athol Mine.

V/Line shows how with grain



The North Geelong Silo Loop which came into operation late last year ready for the anticipated record wheat crop enabled trains to turn around on average in about three hours.

Although the 1982/83 drought was a disaster for Victorian farmers and for the State it allowed V/Line and the Grain Elevators Board (GEB) to assess and plan for future grain operations and to look critically at the existing system, the crucial factor being that the farmers' ability to increase production and harvesting speed had not been adequately matched by more efficient methods of storage and transportation.

The temporary lack of grain owing to the previous year's drought allowed V/Line to take several B and T Class locomotives out of the fleet for rebuilding and upgrading and to start the long process of catching up on a large backlog of deferred maintenance and overhauls on the rest of the locomotive fleet.

In addition 20 new locomotives were ordered for delivery from early 1985 onwards to start the urgent process of modernising the fleet, which now has an average age of 22 years.

The process of phasing out four-wheel GY wagons and constructing bogie hopper wagons continued.

Other changes were also essential. A rail loop with a much more efficient unloading system was constructed at the North Geelong Grain Terminal to provide faster discharge and turnround of hopper wagons and block trains.

grain

All was in readiness for the 1983-84 record 5.2 million tonne grain harvest.

The final plan concentrated on the movement of grain to the seaboard terminals of Geelong and Portland and to the inland sub-terminals of Marmalake and Dunolly and the barley terminal at Sunshine.

With available locomotive power down by about 20 per cent from previous years, it was essential to maximise block train movements and minimise placement and marshalling operations. Wagons had to be continuously kept on the move to terminals and sub-terminals.

Seven block trains of 22 bogie wagons per day and two of 45 GH wagons per day were scheduled into Geelong and four block trains of 33 bogie wagons were scheduled for Portland. It was planned to service the inland terminals with block trains of four-wheel GY wagons.

The maximum number of locations which were able to be served during the overflow period to achieve the target of one million tonnes was 84 silos; these included 14 classified as "central receival points" (CRPs) and 70 known as "overflow silos".

The CRPs were selected on the basis of their ability to load 11 or more bogie wagons while the train waited and for these wagons to be moved to seaboard terminals, unloaded and returned in 24 to 36 hours.

Overflow silos were not expected to be as efficient as CRPs but were required to handle considerably more grain than their storage capacity. It was therefore planned to provide a twice daily service of 11 bogie wagons to each CRP and a daily service to the overflow silos.

The remaining silos were to be operated on a "fill and close" basis and not be served by rail during the overflow period.

The new system required growers to transport their grain by road over greater distances than in the past.

It was obviously a significent change from the old system and would affect most growers, but the system was a necessary reponse to the fact that farmers were delivering more grain, faster, to silos.

Most of the 14 CRPs and 70 overflow silos received the level of service planned. The new system was basically a "trial" and was not intended to be the final solution to the grain handling and transportation problem.

It was the start of a better method of moving grain from farm to silo to rail, to ships and to the end customer.

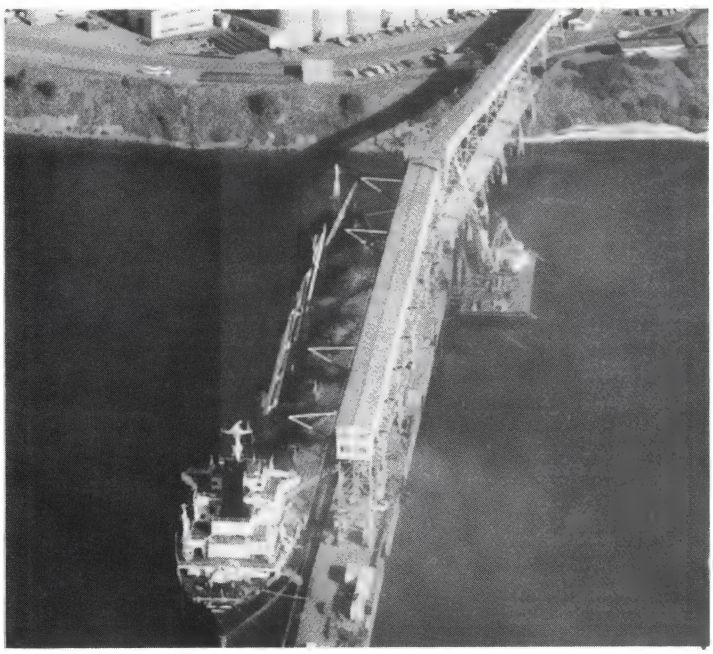
The task for the remainder of 1984 is to achieve an average weekly movement by rail of 100,000 tonnes of grain. This will leave about 800,000 tonnes of wheat in country storage by November. However, if shipping can be arranged V/Line may be required to reduce this "carryover" to closer to 500,000 tonnes.

One hundred new bottom discharge bogie wagons are presently being constructed at Ballarat Workshops and will be available for the 1984-85 harvest.

This will allow a further 700 inefficient open four-wheel wagons to be withdrawn. The first three new locomotives should be available by the end of 1984, and further new and rebuilt locomotives, each costing between $1.0 and $1.8 million, will be delivered during 1985-86.

One of the vast stacks of bagged wheat which were once commonplace across the wheat districts of Victoria. This picture is of Yarrawonga Station at the height of the season.

At the Grain Elevators Board's terminal each wagon bottom discharges its 55 tonne load in about one and a half minutes.



Grain is conveyed overhead and delivered into the holds of bulk grain ships.

NEWCASTLE PLUGS IN

The State Rail Authority completed electrification of train services between Sydney and Newcastle on Sunday June 3.

The first train services in Newcastle ran between Newcastle and Maitland in 1857. The opening of the Hawkesbury River Bridge on May 1, 1889 allowed direct services to operate between Sydney and Newcastle.

State Rail Authority Chief Executive, David Hill, said the introduction of electrified services would bring immense benefits to train travellers.

"Journey times will be faster and services more frequent", he said. "Most of the carriages used will be the airconditioned double deck ones."

"In addition, double deck suburban electric trains will provide a more comfortable and frequent local service between Fassifern and Newcastle", he said.

Obsolete locomotive hauled trains between Newcastle, Maitland and Telarah will be replaced by self propelled diesel units.

Full details of the new services are contained in free pocket timetables.

(continued on page 34)

Main picture: (Courtesy Dale Budd and Associates) shows the two inaugural trains standing side by side at Newcastle Station. Inset: NSW Premier Mr Neville Wran unveiled a plaque to commemorate the historic event.


Inaugural
electric train service
NEWCASTLE
1984
U
22

'Opening day one long remembered'

from page 31.

The opening day will be one long remembered by Newcastle residents. Free travel was provided on local Newcastle train services from 8.00 a.m. to midnight on Sunday.
A commemorative brochure was prepared and distributed to those present.
Mr Hill said two special trains left Sydney shortly after midday arriving in Newcastle in time for the 3.00 p.m. opening ceremony in Scott Street, Newcastle outside the main station entrance.
On the way there was a short ceremony at Wyee where the Minister for Transport, Mr Barrie Unsworth, opened the modernised railway station.
On entering Newcastle Station the Official Train broke through a welcoming banner stretched across the tracks.
The Premier the Hon Neville Wran, QC, MP, unveiled a commemorative plaque to record the historic event at the invitation of the Minister for Transport, Mr Unsworth.
The Civil Engineering works were carried out by SRA staff and by sub-contractors. Track upgrading required 180,000 new sleepers and 150,000 tonnes of extra ballast.
As well as upgrading, the track needed to be re-centred to accommodate the wider and higher double deck interurban cars.
Approximately 190 kilometres of track was re-centred and partially realigned as part of the project.
The 220km of overhead wiring needed is supported by 4,000 steel masts and 190 portal frames. Ten traction sub-stations and sectioning huts and a 66kV transmission line have been constructed to supply the 1500 volt direct current. Electrical performance is monitored and remotely controlled from Sydney and Broadmeadow.
A second high voltage transmission line (11kV) located adjacent to the railway line has been upgraded to provide power for signalling.
The electrification work included restructuring of existing railway facilities, such as overbridges and footbridges. All told, 12 overbridges and footbridges have been rebuilt. One at Cardiff cost $640,000.
Another eight bridges have been raised, and 50 underbridges either have been repaired or modified.
Improvements to station buildings and platforms were also part of the electrification. To make room for the wider electric carriages, 14 station platforms needed to be reconstructed. Some station buildings were renewed and others refurbished as well.
Construction of a second tunnel at Kotara was necessary, costing $4.2 million. The original "Tickhole" tunnel will remain in use for the down line.
New underground signal cabling has been installed to Newcastle. Signal boxes at Awaba, Sulphide Junction, Adamstown and Broadmeadow North and South became redundant with the completion of a new Centralised Traffic Control Centre at Broadmeadow.
In all, 72 main-line semaphore signals have been replaced with colour light signals. The level crossing boom barriers at Adamstown are controlled from the Broadmeadow Signal Centre with the aid of TV cameras and monitors.

Interurban trains.

New high-capacity, double deck interurban trains at present being delivered to the State Rail Authority will service Newcastle. A new contract provides for the construction of 80 cars which will bring the total double decked interurban fleet to 171 cars. These new trains, painted in the SRA's new livery, incorporate several features to increase passenger comfort:

- Improved seating
- Additional seating capacity
- New interior colour scheme
- Improved lighting
- Improved airconditioning
- Wide vision tinted windows
- Air ride bogies for a comfortable ride
- Automatic doors.

Crew comfort and protection have also been a consideration in the design of the new trains, including: High impact driver's windscreen with demister; Improved driver's seat; Tinted side windows in crew compartments.

Electrification advantages.

Electric power is in greater harmony with the environment, being quieter and without exhaust fumes. The progress of an electric-powered train causes little disturbance. Further, there are no requirements for fuel-oil storage and waste disposal at depots operating electric units.
NSW is self-sufficient in generating electric power. Its vast coal deposits ensure its independence from imported fuels for its network power stations.
Above all, are the cost advantages of electric energy for traction over diesel fuel. These cost benefits are becoming more apparent as other fuels continue to rise in price.
Disregarding comparative costs, electrification offers other advantages. When heavy loads have to be hauled on severe grades, such as those on the Newcastle route, electric trains make better use of their short-time rating by drawing more power from the overhead supply.
Conversely, diesel units are limited to the power of the engine installed. Thus, where a track route involves considerable climbing, electric units are faster than diesel units of similar nominal power.
Electric locos don't require time out for fuelling and daily servicing. They are normally only taken into a depot once each week for service.
On the SRA's latest electric locomotives, there is a regenerative breaking system which feeds back unwanted electric power into the overhead wiring for use by other trains.

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New Zealand's train ferry system operates in some of the roughest conditions encountered anywhere in the world. Much of the three hour and twenty minute journey across Cook Strait, between the North and South Islands of New Zealand is spent in the calm waters of the Tory Channel or Queen Charlotte Sound. See story next page.

WORLD'S ROU TRAIN

By a Special Correspondent

Few Australians realise that the world's roughest-water train ferry service is operated virtually on our doorstep by our New Zealand cousins.

And with three ocean-going ships on station at any one time, and six each-way sailings daily across Cook Strait, this is no Manly Ferry.

It's a full-scale blue-water shipping service, more than comparable with the better-known European links across the Channel and the Baltic.

Very high standards of navigation are called for; as well as gales and heavy seas, conditions include fog, currents down the Strait, and difficult harbour entrances.

Barratt's Reef at the entrance to Port Nicholson (Wellington's harbour) has claimed many vessels, including a big passenger steamer as recently as 1968.

On both sides of the Strait, the coastlines are cliffbound and inhospitable — 75 were lost when the Picton ferry steamer ***Penguin*** missed her Wellington landfall and was wrecked near Cape Terawhite in 1909.

In the harbours, winds create demanding conditions for berthing ships in the 5000 to 9000 tons class — high-sided ships, of relatively small draught.

Yet for service to be maintained they must berth on time — very precisely, without tugs and virtually regardless of weather conditions.

All this calls for standards of professionalism in operation, navigation and ship-handling of the highest order — on every trip. And as there are some 4000 crossings a year, an NZR ship is usually the nearest on hand when other ships and yachtsmen get themselves into trouble — which in this part of the world, is not hard to do.

Inter-island shipping.

Organised European settlement in New Zealand dates from the 1840s in the Auckland, New Plymouth, Wellington, Wanganui and Nelson areas, and the 1850s in Otago and Canterbury.

Long before the coming of the railways the pioneer settlements were linked by small coastal steamships, and when the railway did arrive in New Zealand, it came as a series of classic port-to-hinterland links.

These lacked interconnection until much later: Christchurch-Dunedin-Invercargill in the 1880s, Wellington-Auckland in 1908, Christchurch-Picton not until 1945.

The railways on the two islands were under uniform management from the 1870s, but not really integrated until NZR launched its service across Cook Strait in 1962.

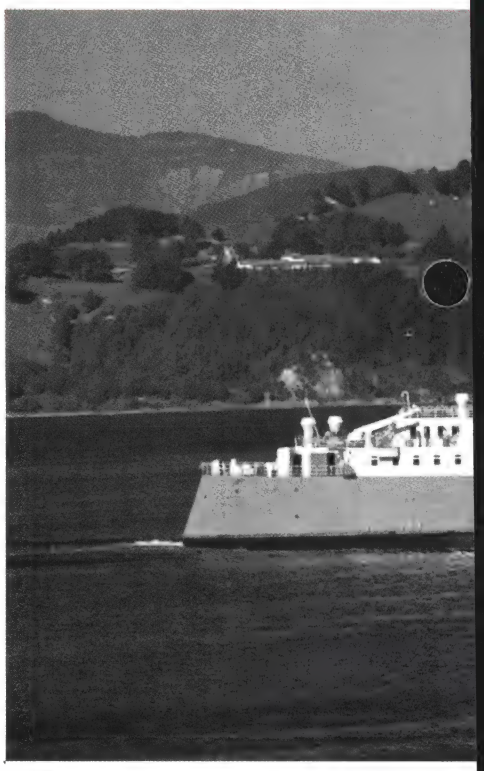
So ***Aramoana***, the first railway ferry, ploughed some historic water in 1962. The first inter-island steamer services had dated from a century before, as ad hoc links in a chain of coastal calls mostly up and down the eastern coast of both islands.

But three services, all from Wellington, soon developed as point-to-point inter-island links in their own right. They ran to the South island ports of Nelson, Picton and Lyttleton, each port having an unconnected railway serving its hinterland.

Nelson, at the NW corner of the South Island, was serviced mainly by Anchor Shipping, a Nelson firm; this port lost its passenger steamer service (the second Ngaio) in 1953, and its isolated steam railway two years later.

Picton was more or less opposite Wellington, and Nelson's arch-rival port. The Blenheim district, Picton's rich and sunny agricultural hinterland, was separated from the port by a hilly (1 in 37) section of railway, again an isolated line from 1875 to 1945, but destined to become part of the main north-south inter-Island rail link.

For many years the Picton service was the territory of the Union Steamship Company of NZ, a locally-founded firm that is still a household name in New Zealand and among most older Australians, too.



New Zealand Railways operate "roll on-roll off" "Aranui", the second of the vessels, can carry 8

The Union Company ran the Picton service from 1925 to 1962 using Tamahine, a graceful little two-funnel 2,000 ton mini-liner. Her bell still rings the sailings of the railway ferries from the Picton terminal.

But the major centre of population on the South Island was Christchurch. Lyttleton, its suburban-distanced port, was connected by a tunnel through the Port Hills to the city and the main South Island rail network, which ran along the coast south to Dunedin and Invercargill, and through the mountains to Greymouth on the West Coast.

And until 1945, Lyttleton was also this network's nearest port to Wellington. So it was directly to Lyttleton that the major inter-island passenger steamer link ran.

The service was one of the Union Company's three major mail runs;

GHEST WATER FERRY...

ies between Wellington in the North Island and Picton in the South Island.
sengers, 60 cars and 30 rail wagons.

the others being the Trans-Pacific and Trans-Tasman runs.

The inter-island service became a regular schedule from 1895, and a daily service from 1903, when it was integrated with the South Island mail trains. In later years boat trains of up to 20 coaches ran right onto the steamer wharf at Lyttleton.

Many famous old Union Company ships worked this overnight service. Every one was a steamer, and the run was advertised as the Steamer Express. The 17 knot Rotomahana of 1878 was the world's first steel ship, and ended her days on the Melbourne-Tasmania run; she ran with the Mararoa (1885) until the era of elegant Edwardian turbine steamers. The two-funnelled Maori (I) of 1907 and Wahine (I) of 1913 maintained comfortable service in 10½ hours, every night in each direction, setting the pattern of two modern ships on station and an older third vessel in reserve. All these ships had bow rudders in the interests of superior manoeuvrability when backing into the difficult port of Lyttleton, and after the first Rangatira of 1934, all were rather unusual in having turbo-electric machinery, for maximum "full astern" power. Interestingly, electric drive is still preferred for NZR's diesel ships today.

By the 1960s the overnight steamer express service was worked by Hinemoa — a 1953 ship with a modern super-structure on a replica of Rangatira's hull, and a second Maori.

The faithful old Rangatira (I) was the reserve ship. Walk-on passenger traffic was subject to increasing airline competition, and motor cars were carried only in limited numbers — all were crane loaded. This was a fairly old-fashioned formula for a short-haul passenger trade.

In 1962 the NZR started to compete using a drive-on motor car ferry service from Picton, their Aramoana replacing the Union Company's Tamahine.

In 1965 the Union Company substantially rebuilt Maori as a drive-on car ferry for the Lyttleton run.

In 1966, NZR put on its second drive-on ferry, the Aranui.

Better facilities were generating totally new business; in 1967 the Union Company replaced the graceful Rangatira (I) at age 33, with a new car ferry, the second Wahine. Competition between the two ports was hotting up.

And then came disaster for the Union Company's steamer express service, on a quite appalling scale. At daybreak on 10 April, 1968, the new Wahine attempted to enter Port Nicholson after a very rough crossing from Lyttleton in a rising south-easterly gale. Cyclonic winds gusting to 230km/h blew the powerful steamer onto Barratt's Reef at the harbour entrance, where she was badly holed and lost her starboard propeller.

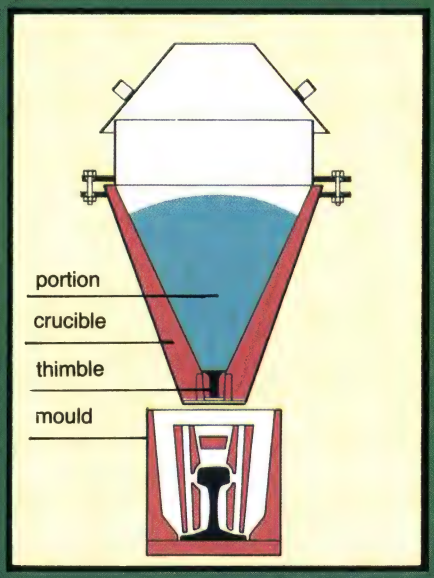
For the rest of the morning all New Zealand huddled anxiously around its radios as the storm blew the ship around Port Nicholson, onto and over other reefs.

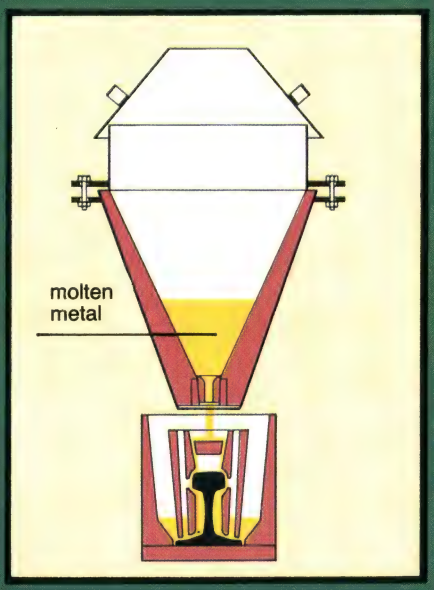
With the passengers assembled in life jackets at their muster stations, Wahine's engineers fought below to maintain steam, power and pumping while seamen on the wave-swept decks of the ferry, tugs and other vessels tried to get the vessel under tow. For there were 734 people aboard Wahine and half the ship's lifeboats were useless because of her list.

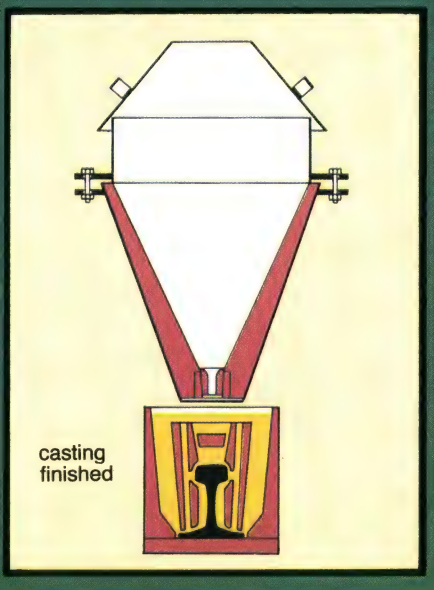
Wahine was lost — she capsized and sank in the early afternoon. But all but 51 of those aboard were saved. Rescuers brought ashore most of them through raging surf. The fact that the disaster took place right on Wellington's front doorstep increased the shock on the New Zealand public.

(continued on page 42)

Westrak welds the way...







...with the Boutet welding process

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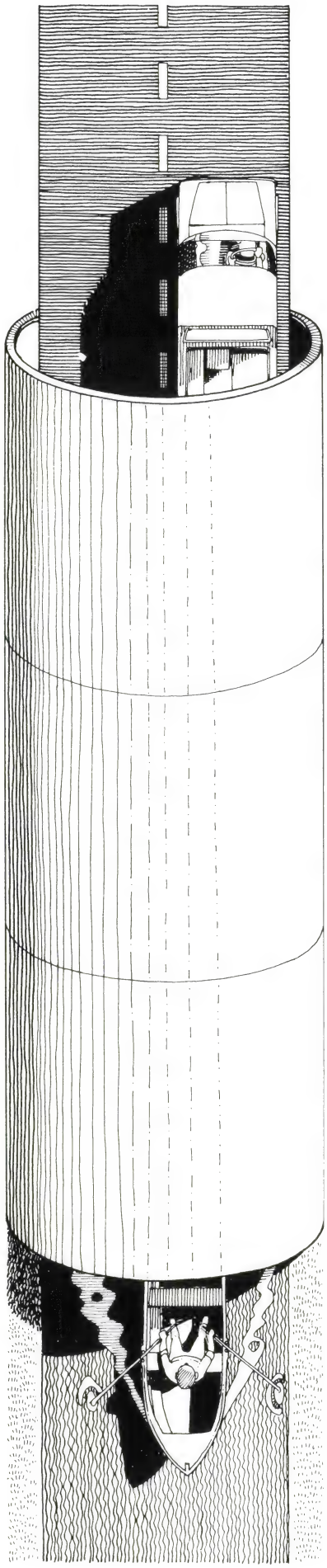

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(continued from page 39)

And the loss of Wahine still remains very much in the minds of all NZ shipping professionals.

Maori and a new Rangatira (she sailed with the RN in the Falklands campaign last year) soldiered on for another six years, but the Lyttleton service never really recovered from the Wahine disaster. Escalating losses forced final closure of the historic steamer express in 1974.

Success of Rail Ferry Service.

One of the ships that sailed into the cyclone and tried to take Wahine in tow was her arch rival, the New Zealand Railways' Aramoana.

People had proposed that the Government should run the inter-island ferries as early as 1885, and in 1927 a report was written that considered the idea of a train ferry to Picton. But the report recommended continuing to run to Lyttleton, with break-bulk ships for cargo and the steamer express service for passengers. The main factor against the 1927 train ferry concept was the then absence of a through rail link from Christchurch to Picton; this link was estimated at 86 per cent of the total cost of the railway/terminal/ship project.

The difficult section of coastal railway through Kaikoura was not in fact completed until 1945, and when NZR put Aramoana on the run in 1962, the usual knockers confidently predicted that the whole idea would be a financial disaster. Just how wrong they were proved to be was shown by the following annual figures.

	Passengers	Motor Cars	Freight Tons
Tamahine — the last year	60,000	11,000	14,000
Aramoana — the NZR's estimate (conservative)	85,000	20,000	100,000
Aramoana's — first year results	207,000	46,000	181,000

Clearly the service was a generator of traffic. By any measure — passengers, wagons, motor cars, tonnages, annual sailings, profitability — the NZR ferries have gone from strength to strength since then. Traffic has all but quadrupled and the service is today a model of its kind, with the fifth and largest Railways ship just delivered. But exactly why is this service such a success, where the company-run inter-island service proved a financial loser?

First, there is still the clear-cut commercial need for surface communication between two islands of a single nation; this applies to rail wagons, road vehicles and people alike.

Secondly, the distance is a manageably short one. With a 17kt crossing in 3 hours 20 minutes and 60 minutes turnaround, six sailings each way daily are comfortably maintained by the three ships on station, with a fourth boat in reserve for maintenance and annual survey. The vessels are thus well utilised; even in the small hours, they move road trucks and rail wagons across the Strait, and earn revenue.

Third, the shipping link is an integral part of the NZR's through freight services. Virtually all NZR's freight stock is today equipped for ferry service. NZR's north-south main line runs from Auckland on one Island to Invercargill on the other, moving wagons over the Strait with exactly the same reliability, aplomb and freedom from fuss that marks their being railed from A to B elsewhere. And, of course, they are tracked by the TMS wagon-control computer.

The shipping service in effect doubled the "range" of the freight railway and raised NZR wagon utilisation a whopping 20%.

Fourth, the ships and the system are flexible. All ships carry rail wagons and motor vehicles, exchanging the former for the latter on the train deck during the Christmas holiday shutdown of NZ industry.

All but one ship can carry roundly 800 passengers. They are often booked to full capacity, as only $NZ16 (slightly over $A11) will get the walk-on passenger over the water, and onto a bus or train at Picton or Wellington.

And finally, the short 98km (52 nautical miles) trip is a well-stabilised sea voyage, and usually a delight in itself, with less than an hour in Wellington's harbour, something over an hour across Cook Strait, and an hour steaming up the beautiful Tory Channel and Queen Charlotte Sound to the picture-book town of Picton.

A real deepwater voyage in a real ship, with scenic variety and beauty thrown in — all for $A11 — it is a "must" for the tourist.

The skilfully-marketed service has certainly caught the imagination of the NZ public.

Hydro-electric installations in the South Island are described as having a "one-Aramoana canal or a two-Aramoana canal"!

NEW ZEALAND RAILWAYS : COOK STRAIT FERRIES

Motor Vessel	**Aramoana** (1962) **Aranui** (1966)	**Arahanga** (1972) **Aratiki** (1974/76)	**Arahura** (1983)
Length, *m*	112	128	148
Beam, *m*	18.6	18.7	20.5
Draught, *m*	4.7	4.9	5.35
Displacement, *t*	4923/4967	6484/6808	9200
Passengers	800/950	40/800	1000
Train Deck (a)			
Tracks, number	3	4	4
Total Length, *m*	213	355	435
Wagons (2 axle=)	30	50	60
Vehicle Deck	32-35 cars	20 19m trucks 10 cars (b) *Aratika* 66 cars	100 cars
Engines			
System	dc diesel-electric	diesel-mechanical + vp propeller	ac diesel-electric + vp propeller
kW	6 x 1320 kW = 7920kW	2 x 4720 kW = 9540kW	4 x 3000 kW = 12000kW (approx)
Speed, *knots*	17	17	19

Notes:

(a) All ships can and do carry cars on the train deck, as well as rail wagons.

(b) When *Arahanga* is used as a car and truck carrier alone, the open vehicle deck is used for vehicles carrying dangerous goods.

"Aratika" the most modern of New Zealand Railway's four rail ferries.

The Ships.

To date NZR has owned five ferries: two pairs of sisters and a fifth larger vessel (see table).

The first was the famous Aramoana ("path over the sea" in Maori), certainly the most loved and arguably most elegant in the railway's fleet.

She was the last ship built by Denny's of Dumbarton in Scotland, entered traffic in August 1962, and underwent a major refit in Singapore in 1977.

After 20 years' hard work she was pulled out of regular service and relegated to the status of relief ship in 1982; she is likely to be sold during 1984*. Her younger sister Aranui ("great pathway") has the same basic dimensions, but a slightly different superstructure with an extra bridge deck. She was built by Vickers-Armstrong at Newcastle-on-Tyne, went on station in June 1966, and was given a major refit in Dunedin in 1978.

Aranui is now the spare (fourth) boat, and should a three-ship operation prove to be practical she, too, may well be sold.

The second pair of ships were larger, and originally built with only limited passenger accommodation, as cargo vessels — rolling on and off their loads of rail wagons, road trucks, and heavy vehicles such as construction plant.

Arahanga ("bridge") was ordered in 1969. She took three years to build; the Upper Clyde Shipbuilders went bankrupt mainly through industrial trouble, and the ship did not enter service until December 1972.

Indeed NZR had to make herculean efforts to get their ship at all.

Aratika ("direct path") was ordered from France; she started cargo work in 1974. It became apparent, however, that after the Lyttleton service shut down there would be a need for a third Railways passenger ferry to cover the passenger service when Aramoana was pulled out of traffic for refit.

The near-new Aratika was therefore rebuilt in Hong Kong with a new, full-length 3-deck superstructure.

On re-entering service in December 1976 she effectively became the flagship of the fleet until the recent commissioning of the fifth NZR ship.

Aratika is a very comfortable ship but has an unbalanced and rather inelegant profile.

The "ARA-5" project materialised in 1984 as Arahura, named after a ship once on the Nelson run. At 9,200t displacement she is the largest NZR ship, and at 19kt the fastest, largely by virtue of her long bulbous bow.

Arahura's greater capacity may make a two-ship service possible, in which case Aranui will be paid off. It is expected that her bow will result in less shore erosion from wash in the narrow channel passages up to Picton.

Ships' Equipment.

All the NZR ferries have the latest models of the usual navigational equipment needed to classify a vessel 100 A1 at Lloyds, most of it with additional back-up systems.

All are motorships, with full bridge control of engines, propellers and bow thrusters. The bridges themselves are exceptionally spacious, with substantial wings that project beyond the ship's side to give the Master a good view aft during the tricky docking maneouvre.

Safety equipment includes comprehensive fire protection, fire doors and the latest life-saving gear, including motor lifeboats, rafts and lifejackets for all passengers. Arahura has inflatable escape slides to hasten evacuation. A lesson from Wahine is the provision of covered-in micro-liferafts for babes in arms; these completely enclose and protect an infant in the water. And on NZR ships the crew exercises a full emergency drill once a week. This means what it says: a full-scale drill involving every crewman and every passenger on that particular trip.

Few travellers, however, give much thought to these things. They drive onto the ship — if they walk aboard, a built-in escalator will take them between decks — and are quickly captivated by her spaciousness, comfortable appointments and the fine view of the harbour and the sea through the deep picture windows.

The ships are airconditioned, stabilised, and fitted with TV and childrens' lounges. For those who need it, private cabins with beds are available.

There is plenty of open deck space, both topside and at the stern, plus an excellent cafeteria. And the NZR ships are spotless to Scandinavian standards.

(to be continued)

*22 years is a long life for a diesel ship today, even though the t.s.s. Tamahine was on the run for 37 years and t.s.s. Rangatira for 33.

Giant Machining Ce

by Charles Lewis

A 100 tonne machining centre employed by British Rail engineering for the fully automatic machining of large workpieces of the most complex nature is one of the largest units of its type ever built in Britain. Nearly 30m long, 8.5m wide and 5.5m high, the DeVlieg Boromil machining centre is capable of a wide range of milling, drilling, boring and tapping operations on a wide variety of workpieces.

In the case of the British Rail Engineering version it will be used among other things for the complete machining of bogie frames in just two settings. Each bogie is approximately 3000 x 2300 400mm, and the automatic cycles involved include machining top and bottom faces, four peripheral external faces, and four faces of the internal cavity.

Fast and Accurate.

The general configuration of the unit is of a horizontal work table moving in the X axis under a bridge-type construction that supports the spindle head.

The latter traverses along the beam in the Y axis, and the spindle feed forms the Z axis to machine the workpiece. The beam can be positioned at different heights to adjust the "daylight" according to the height of the work.

Rugged construction and the use of the latest technologies give a capability for machining large components at high metal removal rates, while fast, accurate axis positioning accelerates production.

In order to achieve the machining of the eight vertical faces involved in the British Rail bogies, the Boromil incorporates a right angle drive assembly which fits into the spindle and can be indexed 4 x 90 degrees by an indexing ;unit at the end of the ram.

Loading and unloading into the spindle is automatic, and when not in use the right-angle assembly is "parked" at the base of the left-hand column in a housing equipped with an automatically opening cover which protects it against swarf and dirt.

A vertical elevator raises it to the spindle when required.

The DeVlieg Boromil machining centre dealing with a typical component.

A special feature of the Boromil is a new design of automatic tool changer. In most tool changing systems, the tools are mounted in a carousel-type magazine which rotates to bring the required tool to the changing position. This limits the number of tools available to within the total weight the carousel can carry, and usually has quite severe limitations on the size of the individual tools.

Moving Carrier.

The new system, designed by DeVlieg, has the tools stored in stationary positions and selected by a moving carrier. This means that the number of tools in a store is virtually limitless.

The arrangement consists of a tool store, a tool selector and a tool exchange mechanism. Sixty tools are stored in fixed positions in two rows — one has 40 locations for tools of up to 120mm diameter and the other 20 locations for tools of up to 250mm. Tool lengths can be up to 400mm. Provision is made for adding extra tool holders between the existing widely spaced ones to take additional 120mm diameter tools.

Each tool is supported by its flange in a U -shaped holder with the taper uppermost. A locator in the base of the U engages in one of the driving slots to orientate it.

A free channel in front of each row allows the tool selector to transport the selected tool to the end of the row and replace the tool last in use in the store. The selector unit consists of a shuttle mounted on a carriage which moves longitudinally on rails above the tools.

It can also move transversely within the carriage from one to the other

ntre for British Rail

The interchange arm in the vertical mode completes a tool change.

row of tools. Carriage drive is by hydraulic motor and sprocket chain. When located above the required tool, the shuttle moves down on a vertical slide to grip the tapered shank and remove the tool from its holder.

Adjacent To The Spindle.

The tool then enters the exchanger unit, which takes it across the front of the beam and positions it adjacent to the spindle. After that the exchanger follows every movement of the main spindle in the Y axis until a tool change is required.

When the tool in the spindle ends its machining cycle the adjacent tool interchanger arm lowers to the required height, removes the tool from the spindle, indexes through 180 degrees, and inserts the new tool in the spindle. As the interchanger arm retracts, the spindle resumes the machining sequence.

The two arms on the exchanger unit have a 90 degree wrist movement capability, which allows automatic changing of tools in both vertical and horizontal spindles.

During the machining operation the next tool is selected from store and taken by the shuttle up the elevator to the beam. When the interchange arm has fully retracted the exchanger unit moves to the top of the elevator, takes the tool from the shuttle and replaces it with the one previously in use. The exchanger unit then traverses across to latch on to the spindle head for the next exchange operation.

At the same time, the shuttle with the "old" tool is lowered down the elevator to locate on the selector carriage, from where it is replaced in its storage operation.

Since the entire machine is of modular construction, many versions can be assembled, and in this way each unit is built to meet the individual customer's machining requirements. Feeds in the X and Y axes are infinitely variable from 1 to 7500mm/min, and in the Z axis from 0.5 to 3750mm/min — with positioning to an accuracy of 0.02mm.

Spindle speeds are infinitely variable from 6 to 1500 rev/min.

The unit is driven by a 30kW motor, and control is by a Kongsberg 2000M CNC system.

Other notable features available include the following:

- Drive motors for the spindle of up to 56kW.
- Fixed beam instead of elevating beam.
- Extended ram stroke to 1000mm.
- Acceptance of a numerical control toolpoint head to give a contouring and thread chasing capability.
- Twin work tables to allow simultaneous machining and loading.
- Extended tool store capacity.
- Extended table stroke in the X axis.

Its extreme versatility, coupled with its modular construction, means that the Boromil will find applications in a wide range of industries, including aerospace, machine tools, shipbuilding, heavy electrical machinery, armaments and printing machines.

A name synonymo

Mayne Nickless is a name synonymous with the transport industry. In days gone by, the company's green trucks were a familiar sight on Australian roads.

Today the old slogan "for every transport need" is only part of the story, as the company's revenue comes not only from transport but also from security and computer services.

Mayne Nickless operates over 60 businesses in Australia, the US, Canada, Papua New Guinea and the UK and employs about 20,000 people.

This is a far cry from 1886, when

Main picture: Looking into Railex's newly completed rail terminal at Islington, SA. Its free span design with "sunken" rail lines, gives full utilisation of the space available. Below: Railex Transport Service's new modern rail terminal at Islington, South Australia.

Freight from Sydney is collected from Intermodal's Melbourne terminal by the businesses' road division. Intermodal operates its own captive train service daily, in conjunction with the State Rail Authority of NSW and V/Line.

us with transport

John Mayne and Enoch Nickless began their parcel delivery business in Melbourne. Mayne Nickless became a public company in 1928 and in 1976, the company decentralised into over 30 Australian businesses.

The decentralisation programme has been successful for Mayne Nickless. Each business trades as an autonomous service under its own name, reporting through a business activity manager to the corporate office.

The decentralisation philosophy is based on small businesses staying close to their customers and thereby providing better service.

continued next page

Intermodal runs a daily service between Melbourne and Sydney using its own captive train. The train is operated in conjunction with the State Rail Authority of NSW and V/Line.

Fluid Freight aims to increase its share of the rail transport market for moving dry flow and bulk liquids, including chemical products.

Rail commitment

Mayne Nickless has been involved with transporting freight by rail for many years. Its new national computerised freight forwarding system and upgraded rail terminals, illustrate part of Mayne Nickless's continuing commitment to rail transport.

Mayne Nickless' wide range of transport services cater for a diverse client demand. Its two major interstate rail businesses, Intermodal and Railex Transport Service offer clients an alternative, cost effective transport mode to road haulage. Both businesses give customers the benefit of rail transport but one specialises in moving full container loads and has the support of road links, the other offers clients with smaller consignments an alternative to road transport.

Full loads

Intermodal operates its own gantry terminals in Melbourne, Sydney and Brisbane and moves full container loads between these centres and Adelaide.

It has been preparing for future growth through a recent terminal rebuilding and upgrading programme. Improved capacity and new handling methods are part of the long term plan to further strengthen Railex's share of the interstate freight market.

The most significent new terminal is at Islington in Adelaide which officially opened on August 16th. This depot links Railex's other operations in Darwin and Alice Springs with Adelaide and other major Australian centres.

Railex Islington features electronic surveillance equipment to improve security and improve operational freight handling control.

The "sunken" rail line and free span building designs give Railex's operational people maximum use of the covered area.

Last year Railex extended its undercover area at Cook's River, Sydney and in 1981 at Acacia Ridge, Brisbane. Extensions to its Kewdale, Perth terminal are currently under construction and it is expected that Dynon, Melbourne will be upgraded during 1984/85.

Intermodal's road fleet provides the door-to-door road link between rail heads and pick up and delivery points. The terminals can provide container storage and provide power points for refrigerated units.

The specialised nature of Intermodal's road-rail operation and its personalised approach to clients, is seen as one reason why Intermodal has overcome the downturn in the rail and road transport industries of the last few years.

General Manager, Tom Clohesy, who is based in Melbourne, believes that Intermodal is now in a strong

position to benefit from the present increased demand.
The inbuilt flexibility of Intermodal's rail link, using partial or back-up road services when required, has allowed many clients to change to rail transport where previously they preferred to use only road.

Small consignments

Railex Transport Service caters for a very different market. It moves small consignments, of between 2 and 12 tonnes, by rail and, where necessary, provides storage and distribution using its local truck fleet. General Manager, Alf Clifton, based in Sydney has had many years' experience in both the rail and road transport industries.

Computerised forwarding

Mayne Nickless has been developing a freight forwarding computer programme which has been successfully piloted, over two years, by another MN business, Sea Pak Transport Services.
The freight forwarding programme will be introduced throughout the Railex system when Islington and Kewdale become operational.

Rail links are also used by other MN transport services such as Fluid Freight, the bulk liquid and dry flow arm, using the knowledge and expertise that Railex and Intermodal have developed over the years.
Fluid Freight currently has submissions under consideration with Rail Authorities, to move certain chemicals by rail using modern container equipment.

Mayne Nickless has many years' association with rail transport, and plans to increase its share of the interstate market.
With the co-operation of the State Rail Authorities, the company will continue to introduce modern handling and administration methods, complemented by updated terminal facilities.

Computerised Freight Wagon Control for Queensland Railways

Queensland Railways will soon be able to put its finger on any one of its 27,000 pieces of rollingstock, and could reduce the overall requirements by as many as 2000 wagons when a new wagon tracing system is in operation.
Approval has been given for the expenditure of $458,000 for the purchase of a computer based rollingstock information and control system.

The system, which would be in operation next year, would give Queensland Railways an almost instant knowledge of the whereabouts of its rollingstock anywhere on the State's 10,000 kilometres of rail line. It would mean a saving of $10 million annually.
Transport Minister, Mr Don Lane, said "It would allow Railways to reduce its fleet of rollingstock because wagons once emptied will be able to be brought back into the system much more quickly than is possible under the current manual numbertaking method.
"This will be of tremendous advantage to Railway customers as it will speed up the operation."

Parratah, Southwardbound, on one of the inaugura

TASSIE TOURS ...

Over the past year, Tasmanian Rail Tours commenced operations of tour trains on the Australian National railway system in Tasmania. Two tours were conducted with rail travel between Launceston and Hobart and accommodation, bus tours, ferry trips, meals etc. offered as an integrated package.

This package enabled Tasmanian Rail Tours to commence operation and achieved the publicity required to carry on further tours.

However, such a package was found to be complicated and difficult to control. Also, the northern part of the railway route between Launceston and Hobart is not particularly interesting.

Thus, it was decided to relocate operations in Hobart and conduct day trips on the Derwent Valley Line to Westerway, National Park and Maydena.

Further it was decided, after upgrading of passenger rollingstock, to aim for the newly developing convention market in Hobart. This market is emerging as a result of completion of the $20 million Wrest Point Convention Centre and the proposed building of another international standard hotel in Hobart.

The convention market provides the opportunity to book large groups at reasonable prices. This is far preferable than aiming for individual tourists and hoping to obtain a viable loading per trip.

After some uncertainty regarding operation, Tasmanian Rail Tours conducted three day excursion trips to National Park, all fully booked.

Tasmanian Rail Tours now intends to concentrate on these day excursion trips.

The Derwent Valley Line is a spectacular route and provides a more relaxed and, from an operational point of view, a far easier and more effective journey for tourists. The Derwent Valley Line crosses the river Derwent no less than four times and spectacular views are obtained from the bridges.

National Park, a destination some 75 kilometres from Hobart, is ideally equipped for large groups with barbecue and picnic areas and a number of tourist attractions, including Russell Falls.

However, before further trips are conducted, it is intended to upgrade the passenger equipment to modern standards. This includes internal and

an Tours.

external painting, heating and a number of small alterations and improvements which will increase efficiency of operation and provide more appeal for passengers.
Initially, it is intended to concentrate on the large group and convention style market and thus become established with a predictable market.
At a later stage, trips open to the public and tourists will be offered on an individual booking basis. When these are introduced will depend on how strong the market demand is for this style of tourist activity in Hobart.
Carriage equipment is at present in the process of being painted — not before time — and before winter weather causes further deterioration of the external body shell.

Tasmanian Rail Tours provides the passenger rollingstock and attends to the passenger organisation and selling aspects. Locomotive power and safe working arrangements are attended by Australian National. Passenger rollingstock utilised comprises an articulated carriage (with buffet service) from the old Tasman Limited service which operated between Hobart and Wynyard. This carriage accommodates 76 passengers and was the carriage which comprised the first trip conducted by Tasmanian Rail Tours. A further two carriages were purchased from the Emu Bay Railway Company in Burnie and so Tasmanian Rail Tours now operates a train with four carriage units with a total seating capacity of 200 passengers.

Regular passenger services in Tasmania were withdrawn by Australian National on 28 July 1978.

Since that time Australian National have carried out a program of rationalisation of rail services in Tasmania and implemented a federally funded program of track upgrading.

It is anticipated that with the improved efficiency of operation of the Tasmanian rail system, coupled with aiming for the upmarket large capacity convention market, Tasmanian Rail Tours will become established as a component of the Tasmanian tourist infrastructure.

Electrification... the French Connection

(continued from page 23)

In 25kV - 50Hz electrification

The general rule is to connect catenary masts with rails.
In most cases, and owing to the use of track circuits, catenary masts are connected by a cable 1,000m long in the middle point of the rails (middle point of the self induction coil or impedance bond).

Implementation studies at the expense of the contractor in charge of the works include drawing up of various documents including, in particular, the following:

- staking drawing indicating the location of catenary masts in relation to the tracks.
- assembly sheets indicating for each mast, the profile of the formation, characteristics of foundation, mast and equipment.

As to catenary equipment, this is supplied by French Railways as from lists drawn up by the contractor and delivered to the work site.
Implementation studies were data-processed when the Paris-Lyon high speed line was electrified.
Programmes were processed in a Hewlett-Packard computer whose memory has a capacity of 318 thousand octets.
Staking drawings are used to collect about twenty items of information for each mast (curve radius, type of equipment, positioning etc.) introduced into the computer by typing on a keyboard and stored on magnetic cassette.
The computer deduces the exact value of moment of forces where the mast is sunk into the foundation, the model and length of the latter, type and dimension of the foundation.
For each catenary mast, length of stays, brackets and registration arms are determined as well as all necessary equipment : by summing up the equipment required for each mast, we reach automatically the list of equipment required for the whole of the line or for a given section.
Assembly sheets showing up all required elements for fitting the two masts opposite each other on both tracks are printed by the computer.

New appointment announced to Inter-State Commission

The appointment of a third member to the Inter-State Commission was announced recently by the Federal Minister for Transport, Mr Peter Morris.

Mr Edward (Ted) Butcher, a senior transport industry executive, joins the other two members of the Commission, Mr Justice Mervyn Everett (President) and Professor H. M. (Ted) Kolsen, who were appointed in March this year.

"I am very happy with Mr Butcher's appointment to the Commission as he brings to it extensive senior managerial and administrative experience in the transport industry, both here and overseas," Mr Morris said.

"It also means that the Commission now has a blend of judicial, business and academic experience and skills as it has an eminent representative from each field.

"This will ensure that the Commission is well equipped with the necessary expertise to provide well-informed and balanced findings in all its investigations," the Minister added.

A fellow of both the Chartered Institute of Transport and the British Institute of Management, Mr Butcher has also been a member of the Transport Industries Advisory Council (TIAC) since 1981 and President of the Australian Road Transport Federation (ARTF) since 1982.

"Mr Butcher has also had a long-standing professional association with United Transport Holdings Australia Pty Ltd. At the time of his appointment, he was its Deputy Chairman, and was previously the Chief Executive having already held other top level positions in the company," Mr Morris said.

The Commission's role, at the direction of the Minister for Transport, is to investigate and advise the Government on matters relating to discriminatory practices, inefficiency or anomalies in inter-state transport. It is currently reviewing the operation of the Tasmanian Freight Equalisation Scheme.

Russian System c

By Grigori Savchenko
Deputy Minister of Communications of the USSR

The Soviet Union has the largest railway network in the world, which extends for almost 150,000 kilometres and is the most heavily-travelled.

In 24 hours Soviet railways carry over 10.5 million tons of cargoes and 11.4 million passengers.

The demand for railway transportation is on the rise. The volume of production in all economic sectors grows with every year. New areas are being opened up in Siberia and the Soviet Far East, where very rich reserves of raw materials have been found. Also, the substantial increase in cargo and passenger carriage is a result of a continued expansion of foreign-economic contracts, population growth and the rising material and cultural standards.

During the 11th five-year plan period (1981-1985) 3,268 kilometres of new mainlines, over 4,000 kilometres of parallel and additional track and 2,400 kilometres of station lines will be built.

What new railways are in the making in the Soviet Union? The largest one is of course the Baikal-Amur Mainline (BAM) railroad, which is 3,200 kilometres long. This autumn the last, "golden", rail will be laid here.

The putting of BAM into operation will accelerate the development of natural resources in vast territories and will give an impetus in the development of new territorial-production complexes in Siberia and the Far East, such as Verkhne-Lenski, Severo-Baikalski, Yuzhno-Yakutski, Tyndinski and others.

With BAM, once out-of-the-way places are being settled and new cities and settlements are mushrooming.

It is the northern spur of the Surgut-Nizhnevartovsk line, built for the development of oil and gas deposits in the Tyumen region and for the improvement of the transportation pattern here.

The Anzherskaya-Barzas line will be the shortest way from the Kemerovo industrial region to the east and to the Tomsk region, thus facilitating the development of new coal deposits.

The Rybnoye-Uzunovo line is being built to ease the pressure on the Moscow junction, particularly the Ryazan-Voskresensk section, and partly for switching passenger and cargo flows in the westward direction. Some lines are in the making in the Transcaucasia.

A 78-kilometre line, Idzhevan-Razdan, will upon completion improve transportation between the southern Transcaucasia and the USSR midlands.

The line Yevlakh-Belokany will help further agricultural development in Azerbaijan. In Georgia it will be promoted by the Marbda-Akhalkalaki line.

Some railways planned for this five-year plan period have been completed and are already in use. For example, the Pogromnoye-Pugachevsk line has become an important link for cargo flows from Siberia and the Kuznetsk coal fields westwards, bypassing the overloaded Trans-Siberian mainline and the Kropachevo-Kuibyshev line.

Another such railway is the Kiev-Tripolye line in the Ukraine, which has eased the stress on the overloaded Kiev-Fastov line and, in combination with the Tripolye-Mironovka line, is the shortest link between Kiev and the Dnieper area, Donets coal fields, the Crimea and the Caucasus.

The Agryz-Krugloye Pole line has opened access to the Gorkovskaya railroad for new large industrial regions in Soviet Tataria.

Several byroads have been built to ease traffic on the overloaded junctions in Yerevan, Rostov-on-Don and Ufa.

Much is being done to electrify Soviet railways. In the current five-year plan period we are switching about 5,500 kilometres of railways over to electric traction. Its share will stand at 60 per cent as of late 1985.

Railways east of Lake Baikal and in the Far East, the Kazanskoye and Vagaiskoye spurs, and the Karaganda-Mointy, Tselinograd-Kokchetav and Minsk-Brest lines will be electrified.

Later on, the remaining sections of the Brest-Khabarovsk spur of the

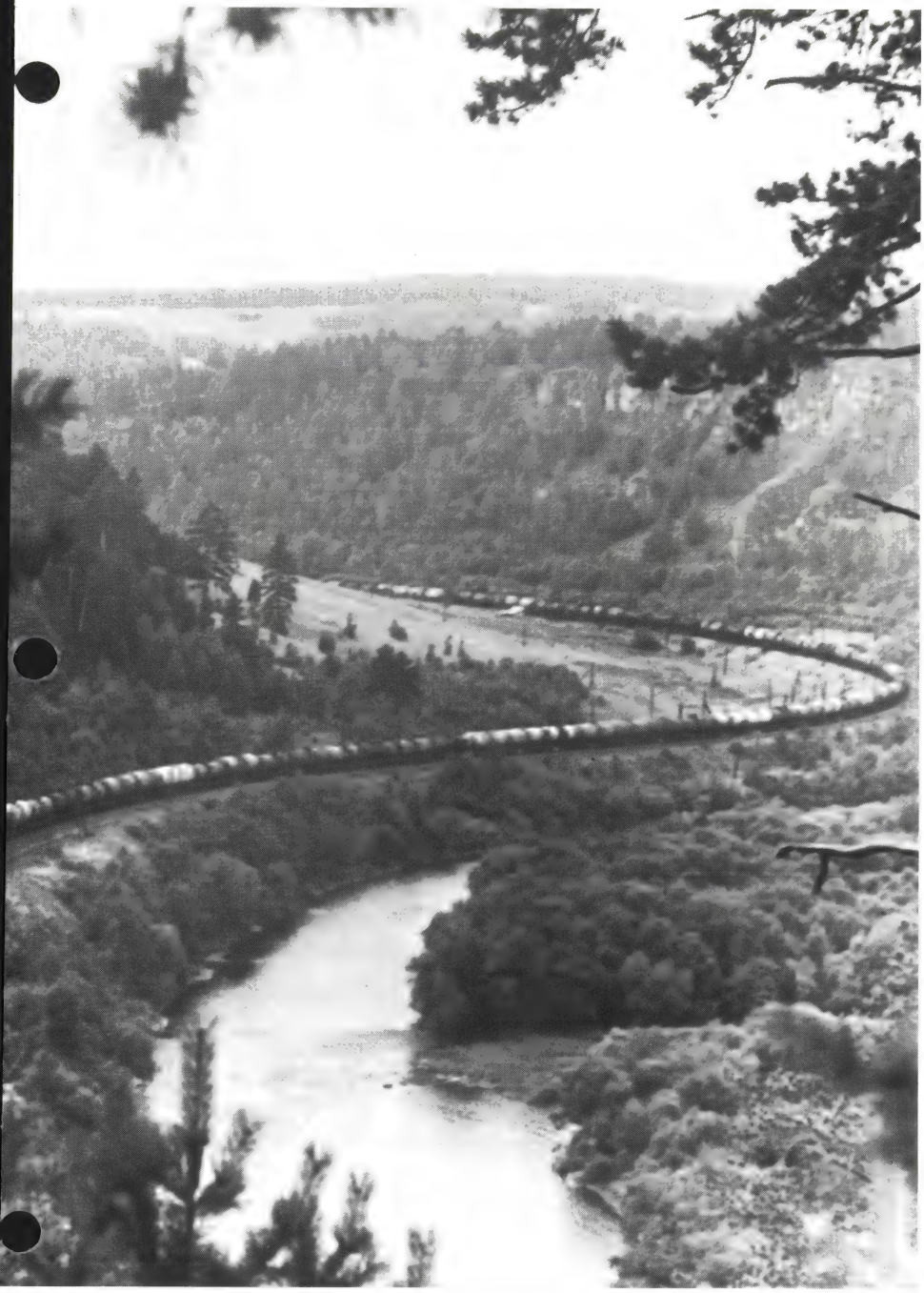
The coal loaded train, claimed to be the longest e four and a half kilometres.

...vers vast distances

total length of over 9,000 kilometres, the second electrified extension from Kuzbass and Ekibastuz to the Urals and the third electrified spur Urals-Center will switch over to electric traction. Besides, about 13,000 kilometres of track will have automatic-block systems and centralised traffic control.
All told, this is substantially to increase the railroads' throughput capacity and to improve the operation of the entire railway transport system, and consequently of the Soviet economy.

Meanwhile . . .

The heaviest freight train weighing 30,220 tons has been made up for the first time in the world and successfully ran on the USSR railways.



...erated in the world consisted of 312 freight cars and stretched for more than

This coal-loaded train consisting of 312 freight cars, stretching for 4.668km, was driven by three powerful locomotives from the Ekibastuz opencast coal pit (Kazakhstan) to the electric power stations in the Urals (Russian Federation).
Thanks to the green light given to this super-heavy train the distance of 1,130 kilometres was covered in 23 hours, also exceeding the speed of conventional freight trains.
Commenting on this event Valery Butko, the USSR Deputy Minister of Railways said:

"The country's railway transport annually carries about 4,000 million tons of freight.
This is 53 per cent of the world's freight turnover. In connection with the dynamic growth of the Soviet economy the requirements in goods carriages are mounting. Soviet railwaymen intend to meet them mainly by raising labour productivity, specifically by increasing the average weight of freight trains.
According to economists the increasing of the average weight of a freight train by 100 tons will make it possible to carry additionally 100-200 million tons of freight on the country-wide scale.
A regular traffic of trains with a freight from 6,000 to 18,000 tons has already started practically on most trunk lines of the country.
The train weighing more than 30,000 tons was driven for the first time by the staff members of the Tselinny railways on which, thanks to the regular sending of trains with increased weight, more than 3 million tons of freight were additionally carried in the first three months of 1984 (to dispatch such an amount of Ekibastuz coal 500 locomotives, as many engine crews and 5 million kilowatt-hours of electric energy would be needed additionally).
It is obvious, said Valery Butko, that the organisation of a regular traffic of super-heavy trains is profitable.

SPD's links with rail 'long-standing'

While it is a relatively new company (originally Unilever Australia Limited's transport department until its incorporation in 1974), SPD's links with Australia's rail systems are almost as old as the railways themselves.

In the early days of Unilever Australia's operations, when long distance haulage presented even greater challenges, the Company built its factories close to the rail lines and water ways.

The necessity to pull in raw materials from scattered suppliers and then distribute finished product to widespread destinations made rail the most practical mode of transportation.

Today, the volume of long distance freight handled by SPD continues to favour rail for reasons of both practicality and economy.

Except from Melbourne each SPD distribution centre located in the five mainland capital cities incorporates a rail siding within the complex.

In Melbourne, SPD's operations are located at Dynon Rail Freight Centre.

Additionally, SPD operates an extensive road-92-5rail network with maxi cube containers and transi-flats on rail hired wagons. So both conventional terminal to terminal rail freight services as well as door to door rail/road full and part load services are provided by SPD's linehaul service.

These services may be integrated with clients own customer service and documentation system or use the total SPD physical distribution and administrative service systems.

With increasing fuel prices eroding the long distance economies of interstate road transport, and the steady development of a more freight movement and customer orientated rail system, rail features in SPD's plans for linehaul business development.

One such development is the maxi cube light tare road/rail refrigerated container that can operate at variable pre-set temperatures with minimum intransit service demand. These containers are capable of transporting perishable and sensitive products such as ice cream over the Nullarbor with no product instability.

SPD's commitment to product care has lead to many innovations in transport, handling and storing client's products. All the physical attributes of each client's products including the Health and Pure Food Acts, Dangerous Goods and Aged Product Legislation, packing and product identification, and pallet patterns are considered by SPD.

In consultation with the client, SPD sets physical standards to minimise product loss through damage, over age limits, and pilferage. As well, product recall procedures are discussed and provisions made in the SPD systems to complement the client's needs.

Through long association with many large companies such as Lever & Kitchen, Rexona, Rosella, Carnation Company, Kellogg Australia, Kimberley-Clark Australia, to name a few, and their customers who range from bulk warehouses down to small businesses, hotels and motels, SPD has learnt the importance of understanding the client's customer service philosophy and performing to that standard.

SPD managers familiarise themselves with a client's individual warehousing idiosyncrasies and can deliver a tailored service which is both efficient and economical.

Warehousing services include import product receipts, customs inspection (Department of Primary Industry), container destuffing or palleting to local standards, and quality control.

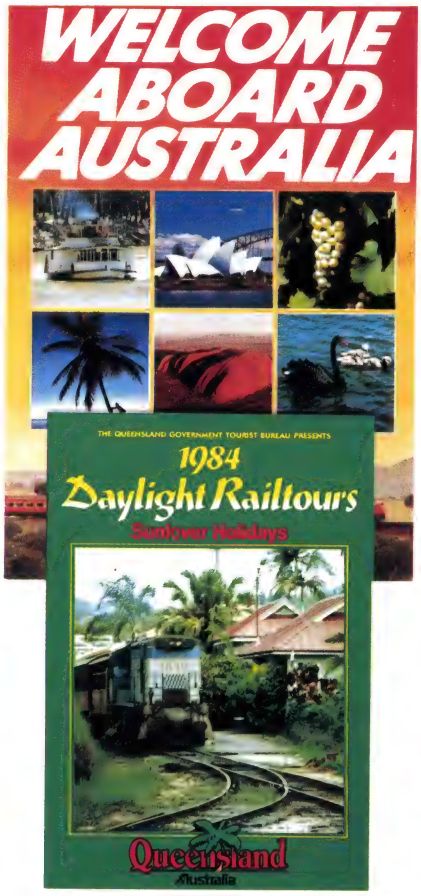
All SPD distribution centres and linehaul terminals are connected through an ICL computer system with three ME29s and backup facilities in Sydney and Melbourne, and smaller 2903 models in all other States. This means that accurate and up-to-date stock movement monitoring activity and billing systems can all be aligned to client documentation.

In each warehouse incoming stock is allocated a place or racking, and the product, quantity and date of manufacture is recorded. This information is updated each day.

A "picking summary" is produced in the afternoon — showing where the stock has come from, and an invoice is printed to go with the goods. When the load has been assembled and put on to the truck or train, part of the "picking summary" is torn off and returned to the computer.

This confirms the consignment has left the warehouse and stock quantity and location records are immediately updated.

According to SPD, the future of distribution in Australia lies in an integrated service which provides flexible computerised systems, efficient, economical transport modes, storage, order picking services and an administrative package. From this can be custom built the service demanded by any user within Australia.



Railways' Packaged Tours... Carefree, Economical Holidays

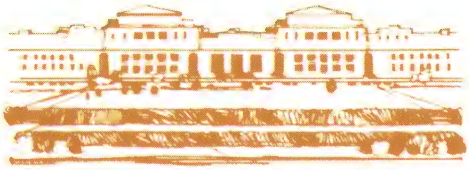
Railways of Australia offer the traveller a wide selection of packaged tours covering travel, accommodation and visits to scenic highlights and major tourist attractions.

Of particular interest are the packaged tours featuring "The Alice" – the all first class service between Sydney and Alice Springs. These "Wonderland" series tours incorporate travel on "The Alice", coach travel or 4 wheel drive; or a combination of both road modes. Accommodation is provided at carefully selected hotels and motels.

Choose from the following tours:

State Rail Authority of New South Wales

- RAIL STAY-a-WAY FARM AND COUNTRY (16 TOURS)
- RAIL STAY-a-WAY OUTABACK HOLIDAYS (6 TOURS) featuring "The Alice" – the all First Class service between Sydney and Alice Springs
- RAIL STAY-a-WAY SUN, SEA & SIGHTS (18 TOURS)
- RAIL STAY-a-WAY 'BIG AUSTRALIA' (10 INTERSTATE TOURS)



State Transport Authority – Victoria

- WELCOME ABOARD AUSTRALIA (24 Victorian Tours – 23 Interstate Tours)

Westrail

- WILDFLOWER TOURS – choice of 2 six-day packages
- WESTRAIL TOURS – 16 selected tours from three to nine days

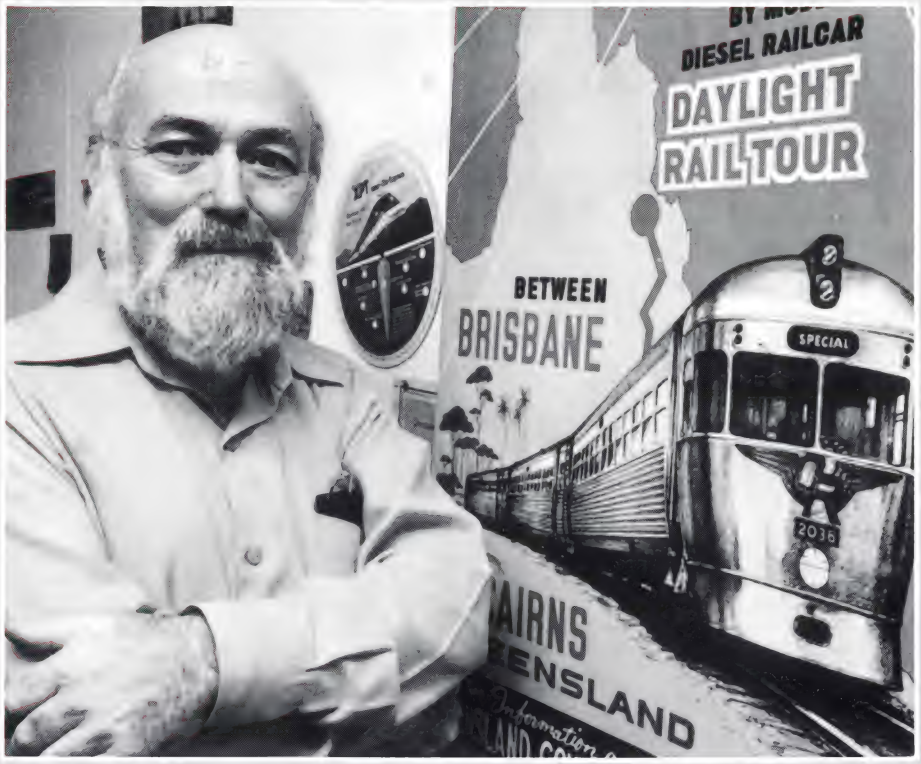
Queensland Railways

- DAYLIGHT RAIL TOURS, COOKTOWN CLASSIC, 'REEF' SERIES TOURS

Ask for complete details where you book your rail travel.

Railways of Australia

An association of the five government owned Railway Systems – Australian National, Queensland Railways, State Rail Authority of New South Wales, State Transport Authority – Victoria (V/Line) and Westrail.



Colin J. Taylor

PhD awarded for rail thesis

Colin J. Taylor, Associate Professor in the Department of Regional and Town Planning, University of Queensland has been awarded his Ph.D for a thesis entitled "Rail Passenger Transport in Australia — A Critical Analysis of the Network and Services".

The thesis was submitted in mid 1983 and accepted earlier this year. The work was the result of 6 years of study, 29,967km of rail travel overseas and 31,680km of rail travel in all States of Australia. Volume 1 of Dr Taylor's thesis is almost 600 pages and the second volume two thirds of that size. 'Network' has been privileged to see extracts from the Examiners Reports, all of whom comment very favourably on the treatise.

Colin Taylor was born in Nigeria of Scots parents in 1928. He holds a BA(Hons) Town and Country Planning Degree from the University of Durham, and in 1950 was the first person to be awarded such a degree.

From 1972 he has been on the teaching staff of the University of Queensland; he was Dean of the Faculty 1975-77 and Head of Department 1980-83.

Prior to moving to Queensland Colin Taylor held posts in Victoria (Director of Planning — Town and Country Planning Board of Victoria), in Tasmania (Town Planning Officer in Launceston) and before 1967 held various planning posts in Scotland and the UK.

His personal interests are listed as music, travel, cookery, people and railways. The interests are a very real guide to Colin Taylor, the man.

Dr Taylor has almost completed a book on Railways which will be published in 1985. The titles for some of the chapters are intriguing to say the least . . .

"Timetablephobia", "Sleepy Country Trains", "The Train That Died of Shame", "The Last Train to Nowhere".

A major chapter of the book will be devoted to "Making the Most of an Austrailpass" — a guide to the Railways of Australia.

'Network' congratulates Dr Taylor on his achievement and wishes him every success in the future.

Commendation

Comeng (Victoria) has received a special commendation from the Institute of Engineers (Australia) for the design of its newly built light rail vehicle.

The light rail vehicle was designed for the Melbourne Metropolitan Transit Authority and the first prototype has been delivered for testing.

The citation noted the remarkable flexibility of the articulated joint, the efficient ventilation system, the electrical circuitry and the body design as features deserving of recognition.

It also noted the versatility of the vehicle and its ability to operate from raised platforms or street level and its ability to use trolley poles or pantographs for power supply.

Mr. Graeme Phipps said later that the LRVs had been designed for warm climates and for Australian track conditions, which were in some regards more demanding than those in Europe.

As a result, the design opened up the possibilities of light rail for other Australian states and for Pacific and Asian nations, he said.

Jack retires after 47 years service.

Mr. J.J. (Jack) Williamson, Chief Supply Manager, Redbank retired from Queensland Railways on 1st July 1984, after 47 years of service.

Mr Williamson commenced with Railways at Rockhampton in 1937 and in 1946 after his discharge from the AIF was transferred to Brisbane when the Stores Branch was located at Countess street.

In 1965 he was appointed to the position of Comptroller of Stores, later to be known as Chief Supply Manager. It was in this position that he served 19 years, the longest period of any previous occupant.

Mr Williamson intends spending his leisure time gardening and travelling.

He is succeeded in his former position by Mr A.J. (Allan) Evans who previously occupied the position of Administration Manager, Brisbane.

Jack Williamson (centre) is farewelled by Q.R. Commissioner Doug Mendoza and the newly appointed Chief Supply Manager Allan Evans. All three have occupied the position of Chief Supply Manager.

Expo/China 1984

The People's Republic of China has designated transportation and energy as top development priorities. China's Railways transported 49.2% of freight and 58.9% of long distance passengers in 1981. Coal is China's top energy resource, and must be transported from the Shanxi fields to coastal industrial cities and harbours.

China's Ministry of Railways administers all transportation, construction, and industrial production of the national railways. It has over 140 units, including 15 railway bureaus, 20 engineering bureaus, five design institutes, 33 locomotive vehicle machinery plants, electric motor plants, 10 bridge construction plants, railway sleeper plants, nine communication signal plants, electrical equipment and materials plants, eight wood preservation plants, four engineering machinery plants, loading and unloading machinery plants, three service equipment and component part plants, and several research institutes and academies.

The Ministry's program for the future includes:

- Build new lines, build more double-track railways, promote electrification of major railways and technical improvements of existing lines, maximise transport capacity.
- Expand yards for key stations, improve despatching, receiving and marshalling of train operations.
- Modernise locomotives, rolling stock, communication signals, bridges, and tunnels to guarantee safer operations and improved labour conditions.
- Implement mechanical loading and unloading, railway maintenance, construction and overhaul of rolling stocks.
- Containerise refrigerated and heavy loads.
- Automation, research and improved operations, marshalling and management.
- Employ large horse-power electric and diesel locomotives.
- Develop special purpose transportation (i.e., dangerous materials, foodstuffs, chemical products, cement, etc.)
- Utilise new techniques, i.e., electronic computers, solar energy, laser, infra-red rays, remote sensing, aerial surveying, etc.
- Construct more urban railways.

A major Railway and Subway Exhibition will be held in Beijing from 21-28 November 1984. The organiser of the exhibition is Mr Andrew Kay, China Promotion Limited, Room 2503, International Building, 14 Des Vouex Road, Central Hong Kong. The Australian contact is International Business Ventures Pty Ltd in Brisbane (Tel: (07) 398 9311)

Further information is available by writing direct to the organisers, or by calling the Brisbane agents.

New Product Strategy Manager for Queensland Railways

Mr Martin Holmes has been appointed Product Strategy Manager for Queensland Railways, and has joined the Marketing Branch situated in Astor Terrace, Brisbane.

Mr Holmes, 38, has a background which makes him ideally suited to his new role of formulating market and profit objectives and developing marketing strategies for both passenger and freight traffic.

Mr Holmes was formerly Manager of Commercial Planning, Marketing Department, Australian Telecommunications Commission, Brisbane. He is a Bachelor of Economics and a Bachelor of Business (Marketing). Queensland's Transport Minister, Mr Don Lane, said Queensland Railway's new marketing team was taking shape and had already implemented a concerted sales drive for new business.

"A complete overhall and review of the Railway's freight business has been undertaken."

"A complete overhaul and review of the Railway's freight business has been undertaken."

"The Marketing Sales Team has completed special "refresher" sales courses and were already making their presence felt in the freight field.

"Customers could look forward to the introduction of several innovations in freight handling and transporting which will put Queensland Railways back up there with the transport leaders," Mr Lane said.

Brisbane Interstate Rail Terminal to move to Roma Street

Queensland Transport Minister, Mr Don Lane said the programme for relocation of interstate facilities would complete what had virtually been a missing link for rail commuters between Perth and Cairns.

"When the project is completed, commuters will be able to make the five (5) State rail journey across the Nation without having to leave a Railway Station."

He said in addition to the convenience of commuters, the relocation project would see a multi-million dollar development of Roma Street which would involve an Interstate Rail/Coach terminal, hotel and business centre.

It was expected that a recommendation on the Roma Street development would be made soon as the Department was examining proposals from several private developers.

Cabinet had agreed that freight facilities from South Brisbane would be relocated at Acacia Ridge.

Walkers-ASEA win $20 million order

The Queensland government has awarded a $20 million contract to Walkers-ASEA Pty Ltd in Maryborough for the construction of an additional twentyfour electric cars for Brisbane's suburban network.

Completion of the order would mean that Walkers-ASEA had manufactured 252 vehicles for Queensland Railways at a total cost of $199.3 million.

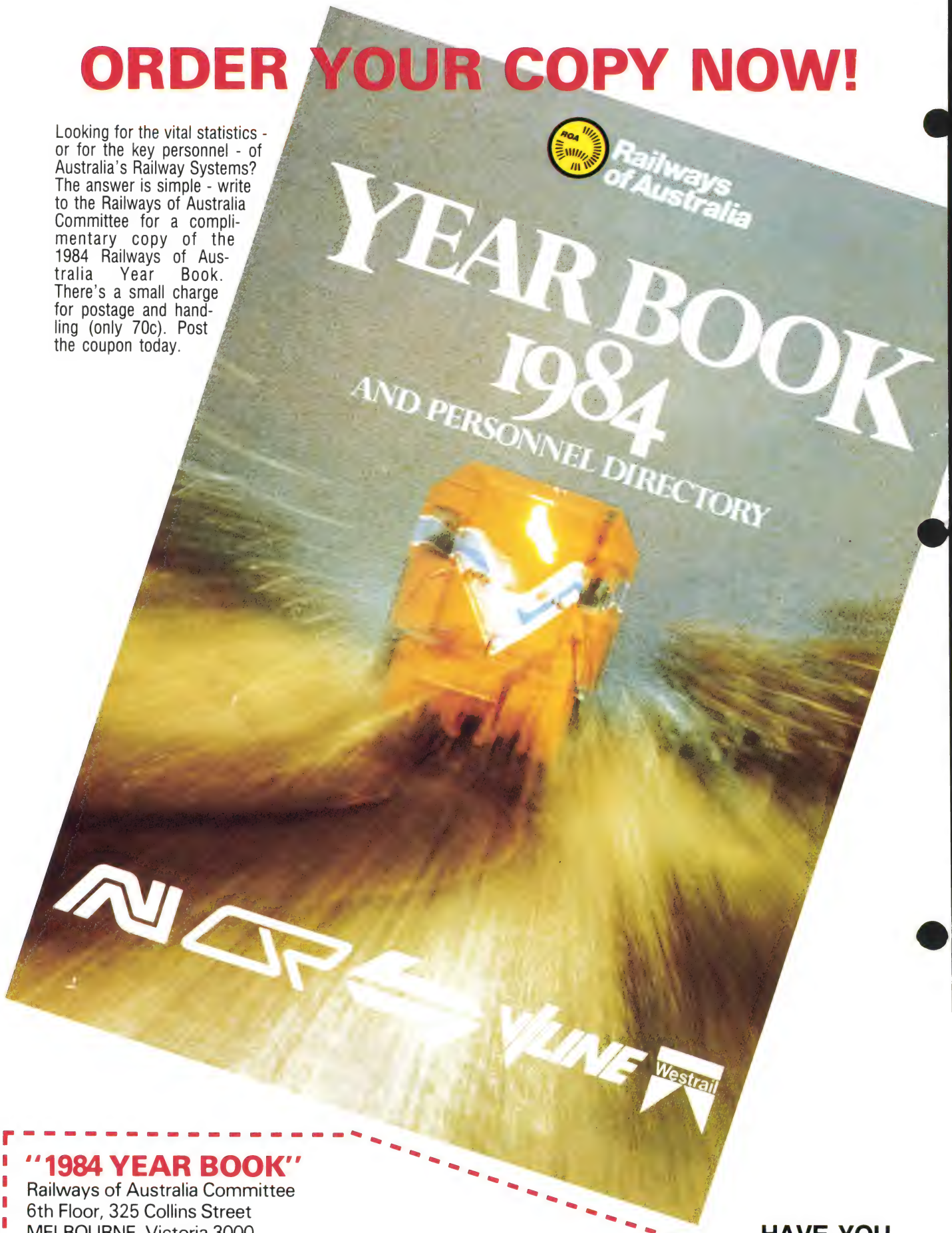
Queensland's Premier, Mr Johannes Bjelke-Petersen, said the Queensland Government had long recognised the importance of the City of Maryborough and its district.

"The Queensland Government has a long history of fighting for the right of the people in Maryborough and has fought long and hard to preserve employment."

Mr Bjelke-Petersen went on to say the member for Maryborough, Mr Gilbert Alison, had made extensive personal representations on behalf of the employees at Walkers who had been employed as additional workmen to facilitate completion of the previous order of 228 vehicles for Queensland Railways.

ORDER YOUR COPY NOW!

Looking for the vital statistics - or for the key personnel - of Australia's Railway Systems? The answer is simple - write to the Railways of Australia Committee for a complimentary copy of the 1984 Railways of Australia Year Book. There's a small charge for postage and handling (only 70c). Post the coupon today.



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Series on diesel railcars great but...

Dear Sir,

The articles by your special correspondent on Australian railcars have been very interesting.

Could you please direct your correspondent's attention to:

(a) His two instalments miss a whole phase of the early application of diesel power to QR railcars (rail motors), first by the conversion of petrol cars to diesel, then by building further light cars with diesel power:
— in 1935, 100hp AEC petrol RM70 was converted to Leyland diesel, the first diesel power on an Australian State system. Then in 1938-43 14, in 1940 RM70 itself, and in 1950 the remaining two 100hp AEC cars were converted to Gardner 102hp 6 cylinder 6LW diesel. Eventually they had a variety of gearboxes.
— 1937-42, 14 45hp AEC petrol cars were converted to 4 cylinder Gardner 4LW diesel. (The 4 cylinder Gardner was not mentioned in the article).
— in 1941-2, the two 100hp Leyland and two 150hp Winton petrol cars, the large cars mentioned in the 1st instalment, were converted to 6L3 153hp 6 cylinder Gardner diesel.
— RMo 81-92 were built new with 102hp 6LW Gardner diesel 1935-1940, and RMo 93-4 in 1950.
All the Gardner engines were extremely reliable. (See ARHS Bulletin August 1967).

(b) One QR 1800 railcar (RM1811) was rebuilt as Commissioner's inspection car in 1982, and is still serviceable.

(c) The statement that the axle boxes of light QR rail motor stock were tied together by leaf springs is incorrect. All bogies on motors and trailers had a light frame, into which the axle boxes were mounted. The transverse leaf springs were interposed between this frame and the bolster. On main lines, these light trailers could give a good ride, but their riding was very sensitive to imperfections in rail surface — corrugations etc. — on account of their extreme light weight.

Yours faithfully,
J. W. KNOWLES

Preservation of an Australian Steam Locomotive

Dear Sir,

This Society exists for the purpose of recording the history of the many Railways built and developed by British engineers throughout the world over the last 150 years.

We are in the process of collecting and preserving unique archive material and have inaugurated a program of acquiring examples of Historic Railway equipment for permanent museum display.

In this we have the full support of the Science Museum in London and the Greater Manchester Museum of Science and Technology. Up to the present time we have completed the repatriation of a 4-4-0 locomotive from Pakistan which is displayed at Manchester along with a huge Garratt locomotive from South Africa the acquisition of which we also assisted.

Our latest successes have been the purchase of a Birmingham-built coach from Hong Kong and the securing of a 100 year-old 2-4-0 woodburning locomotive from Java. We are non-profit making and, in fact, are in the process of becoming an official Charitable Trust.

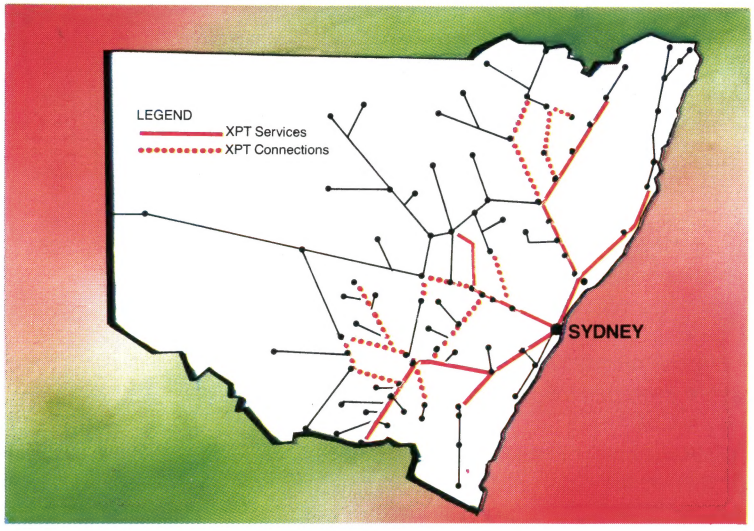
We have little chance of acquiring a locomotive from the Australasian continent unless we have the right contacts.

We would be very interested in the Vale 2-4-0T No. 1042 which is, I believe, on a plinth at Cardiff Workshops but I suppose this is out of the question. As we are a Museum Society rather than an operating Railway the gauge of any locomotive offered together with the mechanical and boiler condition is unimportant.

My colleagues and I hope that you will help us and we look forward to your reply.

Yours sincerely,
S. R. MAZUREK
Trustee and Engineering Sec.
British Overseas Historical Society.

Comeng XPT puts SRA on the map!



Country rail travel in New South Wales is undergoing dramatic and spectacular improvement – thanks to the new generation Comeng XPT.

Introducing a new era in air conditioned comfort, passenger luxury and higher acceleration capabilities, power and speed, the high performance Comeng XPT is the equal to anything available *anywhere in the world.*

Interior features include floor-to-window sill carpeting, panoramic heat deflecting windows, individual reading lights, adjustable reclining seats and many other modern passenger innovations that puts the Comeng XPT right up front with other modern forms of transport!

And this new generation train was designed, engineered and constructed by Commonwealth Engineering for the State Rail Authority – convincing proof of the Company's ability to lead the way now – and in the future – for Australia's passenger and freight transport needs.

Winner of the Chartered Institute of Transport Design Award 1981.

Comeng A train of thought

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